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SYSTEMATICALLY OBSERVED, RECORDED, AND CODED INTERPERSONAL BEHAVIORS OF CHILDREN, AGES 3 TO 11, WERE EXAMINED FOR THE EXISTENCE OF CROSS-CULTURALLY CONSISTENT RELATIONS BETWEEN THEIR BEHAVIORS. THE STUDY SAMPLE CONSISTED OF OVER 130 CHILDREN FROM DIVERSE CULTURES, AND WAS SELECTED FROM COMMUNITIES IN NEW ENGLAND, MEXICO, AFRICA, INDIA, OKINAWA, AND THE PHILIPPINES. TWELVE CATEGORIES OF ACTION, COLLECTED FROM BEHAVIORS OF THE CHILDREN AS THEY WERE OBSERVED IN NATURAL SETTINGS, WERE THE PRIMARY FOCUSES OF THE ANALYSIS. IT WAS SUGGESTED THAT THREE FACTORS SEEM TO PRODUCE THE AMOUNT AND KIND OF INTERPERSONAL BEHAVIOR OF A CHILD--(1) HIS ABILITY TO MEDIATE OUTCOMES FOR OTHERS, (2) HIS PREDISPOSITION TOWARD OTHERS, AND (3) THE CONSEQUENCES FOR SOCIAL EXCHANGE WHICH ARISE OUT OF THE INTERACTION OF THESE TWO PRINCIPAL FACTORS. THIS STRUCTURE WAS APPARENTLY COMPATIBLE WITH THEORY AND RESEARCH IN AT LEAST THREE SEPARATE AREAS OF RESEARCH--(1) CLINICAL PSYCHOLOGY, (2) SMALL GROUP RESEARCH, AND (3) MOTHER-CHILD INTERACTION. CORRELATION MATRICES FOR BEHAVIOR RATES BY SPECIFIC CULTURES WERE PROVIDED FOR EACH OF THE 12 CATEGORIES OF ACTION IN THE REPORT. (JH)

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FINAL REPORT: Research Project No. S-106

"An Analysis of the Cross-Cultural Study of Children's Social Behavior"

THE STRUCTURE OF INTERPERSONAL BEHAVIOR: A CROSS-CULTURAL ANALYSIS*

[FINAL REPORT.]

BY

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Ithaca, N. Y.
May 19, 1966

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education

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PREFACE

While the following is a final report of research analyses, it is also a progress report of my thinking on the subject under investigation -- the structure of social behavior. It has been written with the hope that some of the hypotheses emerging from the analysis will provoke thought and criticism from some of its readers. It is strongly emphasized that the conclusions drawn are highly speculative. Rather than detailing the numerous problems arising in the analysis, an attempt has been made to present most fully the results which have proved possible within the original scope of this research. It is assumed that the short-comings of the study will be readily evident to the readers. In addition, the obvious bias in the direction of seeking out universals, at the expense of de-emphasizing the obvious variability in the data, is fully recognized by the author. It is believed that the Six Cultural Study, unique in its comparative detail, provides a rare chance to pursue the quest for universals. On the other hand, the documentation of cultural variability is readily available in other studies not employing a research design permitting the direct test of cultural universals.

The investigation covered in this report was supported by the Office of Education, Cooperative Research Branch, Project No. S-016. Without their assistance, and patience, this study would not have been possible.

It would take a directory in itself to acknowledge the help and services of all the people involved in the collection and analysis of the data provided by the Six Cultural Study, of which this investigation is just one part. The participation of these people has been acknowledged elsewhere; here I shall just add that without the work of these people, this study would not have occurred.

Additionally, several people have contributed directly and significantly to the analysis covered in this report. Beatrice Whiting made available for summarizing much of the material presented here concerning the general methodology involved in the systematic behavioral observations of the children. William Lambert and John Whiting have contributed careful thought and perspective to the analyses here carried out. Richard Darlington and particularly Lindsey Churchill have contributed greatly with advice and instruction on statistical procedures. Jean Tronick has been a conscientious and able research assistant. Thomas Landauer and Roy D'Andrade played a significant part in the early discussions on the problem here investigated.

Lastly, I would like to particularly thank Maxine Bernstein, who has functioned as general editor in the preparation of this document. She has participated greatly and centrally in the organization, writing and rewriting of this report.

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This research has been undertaken to ascertain the extent and nature of relations existing across cultures between different kinds of social behavior. Our objectives have been two-fold. Our first has been to identify uniform behavioral relations which would emerge within each culture. Our second has been to explore the relations between these behaviors and variations in socialization practices.

This report will address itself only to the first of these two objectives. The second will be treated in a forth-coming volume currently in preparation by John W. M. Whiting, Beatrice Whiting, William Lambert and this writer. That volume will explore not only the relations between socialization strategies as ascertained through mother-interviews, but it will also focus on other variations which are associated with variations in childrens social behavior.

The outline of this report, then, is as follows: following a general statement of the problem, we will describe our methods of data collection. This will include brief descriptions of the cultures included in the analysis, the procedures used in selecting our subject population of children within each culture, our behavioral sampling procedures, the methods of systematic observation employed, coding procedures and categories, and category reduction procedures. This section of the report will be kept to a minimum as much of this information is being reported elsewhere.

The second part of the report will begin with a discussion of our analytic procedures. We will then discuss the various options available to us in proceeding with our analyses, the problems involved, some early attempts to treat the data systematically, and finally the strategies which have provided us with the bulk of our results.

The results are presented in the third part of the report. The section includes findings from bi-variate and multivariate analyses. These are discussed within the context of present knowledge in the field. Finally, a conceptual structure is offered for the interpretation and integration of research in this area.

Statement of the Problem

Is there a structure underlying children's interpersonal behavior? It is entirely possible that a single category of behavior may have no relation to any other categories of behavior. For instance, the frequency of a child's use of physical assault may be unrelated to the frequency of his insulting others. However, it is much more likely that some behaviors do have interdependent relations with some other categories of behavior. Children who assault others, may be more likely to insult others as well. Or, in a setting where adults are absent, children may be more likely to assault and insult others than in situations where adults are present.

By thus conceptualizing an interpersonal situation we can superimpose order on the classes of variables which may be thought to have some bearing upon different kinds of social behaviors observed in that situation. It has been assumed by the investigator(s) that such a conceptual scheme requires, minimally, categorical distinctions such that an interpersonal situation would be seen within the context of the people interacting, the direction and targets of these acts, the physical and social environments within which they occur, and the events which precede and follow them.

Types of relations are thought to exist between the social act and each of these classes of variables, singly as well as in combination. For instance, a particular social action might be performed more often by some children than by others; any particular social act under study might be directed at some particular target persons, more than at others; some categories of behavior might appear more often in some social situations than in others. Particular kinds of behavioral instigations to action might selectively elicit one type of action more than another, and some types of interactional outcomes might be preceded by particular kinds of actions rather than others.

Once such a conceptual scheme has been applied, we can approach even more complex questions. Is it likely, for instance, that particular kinds of children, given a particular kind of instigation to act, will in some situations more than others, resort to particular behavioral targets, in a manner which causes a particular kind of response, from a given target to whom the action is directed? It may be that the frequency or probability of one category of behavior is related to the frequency or probability of another category of behavior because of a common relation with any of the variable classes listed above.

In the present analysis we will concern ourselves with only a small part of this question. We will attempt to establish consistent interrelations between the various categories of children's behaviors, summarizing across the many sources of variance discussed above. By correlating the frequencies of the various kinds of behaviors across the sample of children we, of course, can answer the question as to what kinds of behaviors are likely to be associated with one another across children. Given the frequency of a child's behavior of a particular kind we are able to say to what extent other kinds of behaviors may or may not also typify that child's behavior. Further, if we compare each culture with all the others in our sample, we can begin to ascertain to what extent that culture is a factor in modifying the patterns found. Where extreme variability is observed in such an analysis, we can conclude that the culture, or some factor or configuration of factors with which it is concomitant, is a major variable in ordering the profiles of these childrens' interpersonal behaviors. If, on the other hand, we note that the associations among childrens behaviors are somewhat consistent as we go from society to society, we can alternatively conclude that there are factors commonly present which, irrespective of the specific effects of a given culture, produce consistent profiles of interpersonal behavior among the majority of these children.

Methods of Data Collection

The total sample consisted of sixty-seven girls and sixty-seven boys drawn from communities within the six cultures of Mexico, Africa, India, Philippines, Okinawa and New England.[*] All children ranged in age from 3 to 11 years. Although there was no great difference between the mean age of the older boys and girls (7-11) across the six cultures, there was considerable discrepancy within societies. Within each cultures, with the possible exception of New England, there was as much variation between sex and age groups as there was between societies.

The selection of these children was made on the basis of census material which was mailed to Cambridge. In every case the field workers tried to locate a group of families who lived in the same neighborhood, interacted with each other, and knew the names of each other's children. It was hoped, in this way, to select children whose mothers shared beliefs, values and practices about the rearing of children. The selection of the sample was made in Cambridge in order to avoid the possibility that field teams would draw a biased sample choosing salient or appealing children. The children were selected on the basis of sex and age group. Attempts to match by actual age, sibling order, number of siblings or household type were not feasible with the total number of children available. In four of the societies, the 24 children were chosen from around 300 individuals. In the other two, the total sample included around 180 people.

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[*] We are indebted to Mrs. B. Whiting for making available to us the material summarized in this section. A complete description of the samples can be found in B. Whiting (1963; 1966).

The behavior which is the basic data of this report, was collected in five-minute samples. The observers first mapped the daily routine of boys and girls of the two age groups. They followed them around, noting their presence in different settings at different times of day. They recorded the activities in progress in these settings and supplemented their observations by interviews with adults and children.

Having established the daily routine, the observers began collecting specimens of behavior of the sample children. First they located a sample child, then noted the time of day, the place and the group of people who were present. Each person was classified by age, sex, kinship to the sample child and household membership. The activity of the group was also noted. This initial process took at least five minutes. The observer then took note of the time and began to watch the sample child and record his behavior. An attempt was made to record all stimuli impinging on the sample child so as to be able to attempt to assess the instigations to his behavior. In order to do this the observer attempted to follow the eyes of the child and look where he focussed his attention. If, for example, there was a group of children interacting, the description would not include detailed account of the behavior of anyone who was not being noticed by the sample child. The observations recorded in simple English nouns, verbs and pronouns, purposely contained a minimal number of interpretive qualifiers.

The observer was accompanied by a bilingual assistant who attempted to transcribe all verbal communications. No more than one five-minute period of observation was made on a child per day, to prevent over-sampling of behavior influenced by minor illness or emotional upsets. A more complete description of the methods used can be found in the study edited by B. Whiting (1963).

In the early research plan, nine systems of behavior were included for study (Whiting, J.W.M., 1953). These were: nurturance, dominance, submission, responsibility, succorance, sociability, achievement, aggression and self-reliance. A detailed coding system was developed for the measurement of these behaviors. Each act was coded in a multiplicity of ways. For each event concerning the child who was being observed, the following distinctions were made: If a child's act was judged to have been instigated by some environmental event, the source of this instigation (including the class of person, if the source was interpersonal) and the nature of the instigation were coded. The child's own act was categorized in terms of what it was and what its target was. If the child was involved in a subsequent environmental event, then the nature of this event was coded. If this event was the receiving of a social action from another, then the class of other who was the actor of this event was noted, along with the nature of the action directed at the child. The social situation in which the social event took place was also noted.

Describing just the child's action itself involved multiple coding. First, the behavior was scored for its central meaning. This categorization reflected the primary significance of the code in terms of the behavior's relevance to the theoretical behavioral systems. As a child could be dominant, say, in several different ways, this central act coding was differentiated into 70 separate categories. Groups of categories were constructed to represent each of the behavioral systems.

It was also recognized that a behavior could reflect more than one behavioral system simultaneously. Thus, a child telling another how to do something, or what to do for the good of the second child would reflect both dominance and responsibility. In order to take account of this duplicity of meanings, a second classification was permitted to reflect such complexities. This second classification was called the behavior system adverb code. It included as alternative categories the nine behavioral systems. Thus, a behavior could be classified in the central act code for the kind of behavior manifested, e.g. suggesting, and classified in any of the behavioral system adverbial categories, depending upon the way in which the suggestion was presented, i.e. aggressively, submissively, nurturantly, sociably, responsibly, achievemently, self-reliantly, dominantly, or succorantly. In addition to these classifications of the behavior, other distinctions were made as well. These included judgments of the purposive nature of the act, its intensity, whether or not it was responsively compliant, as well as miscellaneous classifications of interest. As these distinctions are not centrally relevant to the present analysis, little more will be said with regard to them.

In terms of the central significance of the behavior in a given act, then, it could be coded in (70 x 9) = 630 different ways. While the resulting distinctions would be highly sensitive to differences in behavioral manifestations, a problem soon became evident. After the observations were completed and the protocols coded, it was evident that the amount of data collected could not support this many distinctions between behaviors. The total number of child acts coded was approximately 20,000. If the categories occurred with equal frequency a behavior would occur approximately three times during the whole course of the study! Through some preliminary counting it became evident that while some behaviors occurred much more often than others, still a great deal of category consolidation would be necessary before any meaningful quantitative analyses could be carried out. This raised the question as to what criteria could be employed to reduce the number of distinctions made among the behaviors.

To summarize the results of a long process, the criteria finally arrived at for grouping categories were the following: 1) theoretical equivalence, 2) frequency of occurrence, 3) empirical relationship, 4) unreliability between similar categories, and 5) interpersonal reference.* To start with the last, the strategic decision was made to include in the analysis only behaviors which were interpersonal in nature: i.e. behaviors by the child which were directed at another person. This automatically excluded all those behaviors the child might have engaged in when alone (except, of course, for the presence of the observer).

Those categories which were theoretically similar and which the coders were not able to distinguish with reliability were also automatically grouped together. A frequency count of the remaining categories was obtained. It was observed that there were pile-ups of frequencies within a fairly small percentage of the categories. On the basis of this table it was decided that a much smaller number of categories would represent most of the behavior observed. As a next step it was decided to explore the empirical relationships existing among the most frequently occurring categories. An r-r analysis was carried out by intercorrelating these behaviors across the total sample of children. As it was important to maintain the adverbial floater wherever possible, a procedure was used in determining the use or non-use of the adverbial floater. Any central act-adverbial floater category combination which had 1) an adverbial floater from a system different than that implied by the central act coding, and 2) a frequency of greater than 67 was included as a separate category in the correlation matrix. If one or the other of these two conditions was not met, the category included in the correlation matrix was defined by the central act distinction solely. Those categories which did not reach a frequency of 67, even when disregarding the adverbial floater distinction, were dropped from the analysis. The resulting number of categories included in the correlational analyses was 32.

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*Numerous people took part in this task. Especially involved were Roy D'Andrade, Thomas Landauer, Beatrice and John Whiting, as well as the present writer.

The empirical relations between categories were examined, keeping in mind the theoretical distinctions provided by the underlying conceptualizations of behavioral systems. On the basis of these criteria, category groupings were made to yield the categories listed below.

1) Gives help. Any behavior which was categorized as giving help in the central act categorization, irrespective of adverbial floater attached.

2) Suggests reponsibly. Constructed from three multiple classified behaviors.
    a) Any behavior which was classified as "suggests" within the central act code, and was classified as either "responsibly" or "nurturantly" within the adverbial floater code.
    b) Any behavior which was classified as "suggests" within the central act code, and as "taking an adult role" within the purposive nature of the act code, and not classified within the behavioral system adverb code as either "aggressively", "submissively", "sociably", "achievemently", "dominantly" or "succorantly".
    c) Any behavior coded as "assaults on person" in the central

2) Suggests responsibly.

c) (continued) act code and coded with "nurturantly" or "responsibly" in the adverbial floater column. (These were very infrequent.)

The large majority of behaviors included within the "suggests responsibly" category were drawn from the first component described.

3) Reprimands. This category is made up of four sub-categories.

a) Any category that was scored as a reprimand in the central act code, irrespective of behavioral system floater attached.

b) Any category that was coded as "warns" within the central act coding.

c) A classification of "threatens punishment by speaker" in the central act code if the act was also either classified as "taking adult role" in terms of its purposive nature, or as "responsibly" or "nurturantly" in the behavioral system adverb distinction.

d) Any act of behavior which was coded as "accuses of deviation" within the central act code.

4) Attempts to dominate. This category is composed of two kinds of multiple classifications.

a) Any behavior which is coded as "suggests" in the central category classification, and is coded as "dominantly" in the behavioral system adverb code.

b) Any behavior which: is coded as "suggests" in the central act code; has no behavioral system adverbial floater; is not coded as "adult role" for its purposive nature; and is not coded as moderate or less in act intensity.

"Suggests dominantly" provided the major part of the frequency for this act.

5) Calls attention to self. This incorporates two sub-categories.

a) Any behavior which is coded as "arrogates self" in the central act column.

b) Any behavior which is coded as "seeks approval (for self)" in the central act column.

These two categories were combined because they were intercorrelated with one another; individually they were too infrequent to use as separate behaviors; and theoretically they were held to be somewhat similar in that both had involved the child's acting in a manner so as to direct the other's attention toward himself. (More specifically, if the intention of the child's act is realized, in both cases another person will be present on the occasion when approval is bestowed upon the child -- in one case by the child himself, in the other by the participating target.)

While the reasons for the grouping of these two sub-categories was less evident than most of the others, their empirical relations were strong enough to suggest functional equivalence. However, it has since been established in many of the analyses that this category bears a variable

5) Calls attention to self. (continued)
relation to other variables. For this reason, it is retrospectively thought that this grouping was perhaps not a good idea.

6) Acts sociable. Acts sociable is composed of four sub-categories.
   a) Any behavior which is coded as "suggests" within the central act classification, and as "sociably" within the behavioral system adverb column.
   b) Any act coded as "joins group interaction" within the central act code.
   c) Any act coded as "greets" within the central act code.
   d) Any act coded as "is sociable" within the central act code.
"Is sociable" provided most of the frequency for this behavioral consolidation.

7) Gives support or approval. This category is made up from two separate categories.
   a) Any behavior which was coded in the central act classification as "giving emotional support or affection".
   b) Any behavior which was classified in the central act code as "giving another approval".
These two behaviors were theoretically viewed as similar, and empirically were correlated with one another.

8) Contacts physically. Any behavior which was coded in the central act classification as "physical contacts", was a part of this category for analysis, irrespective of the behavioral floater.

9) Succorance. Succorance is composed of two types of behavior.
   a) Any behavior which was coded as "suggests" in the central category classification, and as either "submissively" or "succorantly" in the behavioral system code.
   b) Any behavior that was coded as "asking for help" in the central act column, irrespective of behavioral system floater.

10) Assaults physically, sociably. Included as an instance of sociable physical assault, is any category that is coded as "assaults on person" in the central act, coded as "sociably" in the behavioral system code, and coded as "other than accidental" or "adult role" in terms of the purposive nature of the act.

11) Assaults physically (non-sociably). Included as non-sociable physical assaulting are behaviors coded as "assaults on person" in central act code, coded as neither "accidental" nor "adult role" in purposive nature of act code, and as neither "sociably", "responsibly" or "nurturantly" in the behavioral system classification.

12) Symbolic aggressions. Symbolic aggressions were composed of six types of behaviors.
   a) Any behavior coded as "frightens" in the central act coding.
   b) Any behavior coded as "insults" in the central act coding.

12) Symbolic Aggressions. (continued)

c) Any behavior coded as "threatens physically by gesture" in the central act coding.
d) Behavior coded as "threatens punishment" by speaker in the central act code, which is not coded as "adult role" in purposive nature of act, and not coded as "sociably" in behavioral system classifications.
e) Any behavior coded as "challenges to competition" in the central act code.
f) Any behavior coded as "suggests" in the central act code, and as "aggressively" in the behavioral system classification.

These twelve categories will provide the data for the analyses carried out in this report.

METHOD

Our first question asks to what extent the relations among pairs of behavioral categories is consistent across societies. Or, conversely, to what extent is there variability among categories of behavior from society to society. One possibility is that the correlations among all behaviors are sufficiently consistent from society to society so that it can be assumed that underlying interpersonal situations are factors which invariably produce patterns of behavior, irrespective of the culture in which the interpersonal behavior takes place. While living in a different culture may make a difference in peoples' lives, and perhaps in terms of some of the ways in which they relate to one another, the cultural condition does not effect the structural profile of a child's interpersonal behavior. A child who is high, for example, in giving help in a culture is, relative to other children in that culture, also a frequent giver of support-approval, irrespective of which culture the child is from.

Within the framework of consistency across cultures, it is also possible that there may be an invariant lack of relation between behaviors. That is, the correlation between any two variables hovers around zero, irrespective of the culture. In this case two types of argument might be generated to account for this invariant lack of relation. The more familiar interpretation would be that the chain of events which would produce a relation between categories is too complex. That is, there are so many contingencies, that the probability of them all occurring is sufficiently unlikely so that a lack of relation would be consistently generated.

A less familiar interpretation is that the consistent lack of correlation is due to the fact that the behaviors contain underlying dimensions having different relations to one another. Each behavioral category could be, for instance, the reflection of two underlying dimensions. One of the dimensions, say power, might be positively reflected in one of the behavioral categories and negatively reflected in another. Such a characterization would produce a negative relation between the two categories. However, the second dimension, say affiliation, might be positively represented in both the categories. This would produce a positive correlation between the two behaviors. If the positive and negative relations were of equal strength, the result would be a zero correlation between the two categories. If these two behaviors reflected consistent weightings on the two dimensions, the correlation between the two categories would be consistently around zero.

Returning to the more familiar possibility - that of a consistent positive or negative relation among types of behavior - such a finding could be interpreted by at least two kinds of orientations. First, a personality theorist might explain the relation among behaviors by maintaining that both were reflecting the same underlying need. Thus, if it were held that some people have a greater need for dominance than others, a consistent positive relation between reprimanding and, say, suggesting responsibly, would be interpreted as indicating that both were at least partially provoked by the person's need to dominate (c.f. Leary, 1957). A consistent negative relation between suggesting and complying with other's suggestions, would be interpreted in the same way. An assumption in such a view is that the phenotypic behaviors are more specific than the underlying need. In the service of the need they can serve as functional equivalents.

The second orientation amenable to consistent relations among behavioral categories across cultures is one holding the human condition to be such that the environment produces consistent press on interpersonal behaviors. For instance, at the level of small group behavior, it may be held that leadership functions must be fulfilled irrespective of culture, in order for the group to move toward its goals. The enactment of a leadership role would involve the production of behaviors which can be differentiated on some dimension, but which commonly serve to facilitate group locomotion. Thus, because reprimanding and suggesting responsibly both work to locomote the group, and perhaps work best when enacted by the same occupant, persons holding a leadership position will tend to enact both of these behaviors more than the average group member. As such, to the extent that leaders are necessary in interpersonal situations, these behaviors will be consistently related to one another, irrespective of interpersonal situation or culture. This second view assumes behaviors to be often and consistently related to one another because of the functional requisites of the social system.

A third position, of course, is that the personality structure and the environmental situation both act to combine in producing consistent relations among behaviors. As opposed to finding consistent relations among all behaviors across all societies, is the possibility of finding no consistent relations among any two behaviors across societies. Such a result would be interpreted as indicating that the effects of living in a particular culture overwhelm whatever universal variables might otherwise be operative to fix relations among categories of behavior.

At the level of personality, it could be maintained that each culture produces its own personality syndromes which integrate needs idiosyncratically. Or, again, while personality dimensions are universal, the kinds of behaviors which are used to realize them are culture-specific. While reprimanding and suggesting responsibly may be the way in which dominance is achieved in one society, giving help may be the way in which it is realized in another. At the level of environmental explanation it can be offered that societal organizations vary sufficiently in their adaptation to their environment, so that each may give rise to culturally unique profiles of interpersonal behavior.

While both the generally consistent and inconsistent patterns are possible, it is more reasonable to suppose that the actual state of affairs is somewhere between the two. Some relations among behaviors will be more consistent than others; some relations among behaviors will be closer than others. Our immediate task is to establish how much consistency we might expect among specific behaviors; we are further interested in the nature of this consistency. Once this is accomplished, we can turn to the question of explaining the emergent patterns.

Rates or proportions?

We are faced at once with deciding what kind of a behavioral measure to use. Two suggest themselves immediately: the rate of enacting a particular behavior, and the probability of enacting one particular interpersonal behavior, rather than another.

The rate measure is obtained by dividing the frequency with which a child enacts a particular behavior by the total amount of time he was observed. This yields a rate of producing a given action per hour. This is the most typical measure used in observational studies.

The probability measure is obtained by dividing the frequency with which a child enacts a particular category of interpersonal behavior by his total frequency of enacting any interpersonal behavior. This yields a measure of the likelihood that a child will produce a particular kind of social act, given that he is going to enact an interpersonal behavior.

These two measures have been necessary in many studies because of the fact that some people are more interpersonally active than others. Thus, one child, by virtue of his high social participation, may enact more of every kind of interpersonal behavior than another less active child. In order to find out to what extent these two behavioral measures differed in our sample, we intercorrelated the twelve rate scores with the corresponding twelve probability measures. These intercorrelations are reproduced in Table I.

First of all it can be seen that the rate and probability measures in each society share between 70 and 80 percent common variance. This indicates that the two behavioral measures are reasonably similar. However, the twenty-five percent of the variance not in common to the two measures is sufficient

TABLE I

Relation of Probabilities to Rates

								All societies	
	Okin.	Phil.	Ind.	Mex.	N.E.	Afr.	$\bar{x}r^2$	r	r^2
Gives help	.890	.804	.794	.857	.814	.852	.698	.669	.448
Suggests responsibly	.945	.906	.909	.939	.847	.892	.822	.825	.681
Reprimands	.859	.926	.918	.935	.812	.776	.769	.754	.568
Attempts to dominate	.874	.765	.909	.850	.888	.954	.766	.821	.674
Acts sociable	.807	.542	.807	.594	.709	.615	.400	.688	.473
Calls att. to self	.893	.935	.903	.934	.889	.759	.787	.875	.766
Gives support-approval	.855	.918	.720	.896	.823	.774	.695	.788	.621
Contacts physically	.914	.964	.958	.977	.978	.912	.904	.934	.872
Succorance	.846	.854	.835	.932	.738	.888	.724	.753	.567
Assaults sociably	.959	.867	.733	.872	.962	.987	.811	.861	.741
Assaults	.965	.955	.940	.951	.957	.891	.890	.868	.753
Symbolic aggression	.757	.816	.873	.825	.777	.795	.652	.738	.545
	.778	.742	.700	.784	.729	.717	.741		.642

to, on occasion, give separate pictures of the same behavior. This will be discussed in greater detail below. There is little variance between cultures in this relation. In India and Africa there appears to be more independence between rate and probability measures than in Mexico and Okinawa.

If one disregards the culture in which the child is studied and correlates rates and probability measures across all 134 children at once, the corresponding common variance drops 10%. This is viewed as indicating that factors associated with individual cultures reduce the total consistency of the relation among these two behaviors by this amount. It is thought that conditions associated with observational methods might account for this increased variation. In particular, some observer notes were more detailed than those from other cultures. This produced a greater number of categorized actions when coded by coders. Assuming a consistent relation between rates and probabilities across cultures, it would be the case that the mean probability scores for each category would be consistent. The rate scores, however, due to the observer differences in information provided in the protocols, would vary from society to society. The result is that the correlation across all children would be reduced by this added source of variability.

Looking now at the rows of the matrix rather than the columns, it can be seen that the relation between some category rates and probabilities is much less than among others. In particular, the relation between a child's rate of acting sociable, and the probability of his doing so is quite low. About half the time a child who is infrequently sociable will be a child who has a high probability of being sociable if he interpersonally acts at all. The relation between these two measures is particularly low in Philippines, Mexico, and Africa. To a lesser extent the relations between the frequencies and probabilities of Symbolic aggression, Gives help, and Gives support-approval are also less close. By way of contrast, the relation between the rate and probability of Contacts physically is very close (r^2=.904). Children who frequently make physical contact with others are also very likely to enact such a behavior when they interpersonally respond. The same is true with children who assault.

These variable relations can be ordered approximately by the average rate of occurrence of the category. Those categories which yield moderate relations between rates and probabilities are the more frequently occurring behaviours. Those categories which reflect close relations are least frequently enacted.

In summary, it can be said that there is more variance between categories than between cultures in the closeness of the relation between the rate and probability measures. In either case the relation runs from moderate to quite close. By way of strategy of presentation, we will present a more detailed analysis of rates, but will discuss probabilities as well, where there are marked differences in the results.

The strategy finally arrived at for answering the question of consistency of behavioral relations departs greatly from that originally envisioned. This is so because the initial strategy proved unsuccessful. First, the product-moment correlation matrices of the twelve categories were computed separately for each of the six cultures. This procedure was done once for behavioral rates and once for behavioral proportions. A third set of correlation matrices was constructed by partialing out the rate of social activity from the correlations among category rates. The second step was to use a principal components solution to factor analyze each of these 18 correlation matrices. The third step was to use various mathematical and theoretical criteria to rotate each set of matrices (rates, proportions, and rates with over-all social activity rate partialled out) to similar factor structures. The plan was to then get six sets of factor scores for each child in the sample on the basis of each of three sets of analysis. These would be intercorrelated to see to what extent the factor structures were substitutable for one another.

This line of analysis never proceeded beyond various rotations of the principal component solutions. The reason for this is that the emergent rotated structures never appeared similar enough to warrant the further analysis. Two kinds of reasons might be responsible for this failure to find factorial similarity. First, the lack of similarity between cultural analysis could be indicative that none existed -- that is, personality structures within cultures are idiosyncratic to cultures. If such were the case, then the null hypotheses regarding cross-cultural dimensions of social behavior would not be disproved. This certainly would be a finding in itself. The study might have been terminated at this point.

However, a second possible reason for the lack of similarity might be found. In particular, it might be that two methodological short-comings were responsible for our substantive difficulties. Most pertinent is the size of the N's involved in the analysis -- ranging from 24 to 16. (Twenty-four children were included from New England, Okinawa, Phillipine, and India. In Mexico there were 22 children, and in Africa, there were 16.) A general minimum commonly recommended as requisite for a factor analysis is 50. With such small N's, it is easily likely that the correlation matrix factored might be highly effected by sources of variance idiosyncratic to the particular children selected for our sample. This variability might be accentuated by the second short-coming in method -- the amount of each child's social behavior which was observed. As the average child was observed for a total of approximately an hour and a half's total time, the amount of behavior of the child included for analysis tended to be about 134 interpersonal acts. Thus, the sample of a child's behavior -- particularly considering that he was observed in various settings with various people present and absent -- might be an inadequate representation of his over-all behavioral patterns. The moderate behavioral stability scores we obtained partially bears this out.*

Examination of the correlation matrices seemed to indicate more similarity across cultures than was appearing in the factor analyses. It appeared that some correlations within each of the cultures were perhaps significantly modifying the common variance picture. Thus, further attempts to test consistency of behavioral relations appeared warranted. This belief was strengthened by one research operation undertaken. A correlation matrix was computed for the 12 categories' rates using the total number of children in the sample as an N. This matrix ignored the cultural identification of the child. It was factor-analyzed (principal components solution) and rotated (with a varimax criterion). The emergent factor structures for both the principal components solution and the varimax rotation were highly interpretable. Thus, it appeared that the raising of the N to 134 by pooling cultures enabled a meaningful structure to emerge from the component parts which individually failed to produce such a structure. From this it was concluded that the lack of consistency to a great extent might be attributable to inadequate N's.

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*The details of this analysis will be reported in Whiting, Whiting, Lambert, and Longabaugh, Children of Six Cultures.

From these considerations a less powerful test of cross-cultural dimensions of behavior was arrived at. It was decided to test for cross-cultural invariances by the following procedures. First, we would undertake a search for bi-variate cross-cultural consistencies. This strategy was accomplished by: 1) converting the separate correlation matrices for each society to "z" scores, 2) summing these variates across cultures and testing the mean variate for statistically significant departure from a zero relation, and then 3) asking whether or not the correlation between each pair of acts from the six cultures could be considered to have been drawn from an identical sampling distribution. The question is whether or not the six correlations are all sample estimates of the same true correlation. In order to test this, the sample standard deviation obtained from the six z's was compared with the expected standard deviation of the sampling distribution. If values were obtained which were significantly larger than expected (.025 was used as the criterion), then the hypothesis that all six correlations were drawn from the same sampling universe was also thrown into question. This type of analysis yields four probable outcomes: 1) the relationship between the two categories of behavior does not depart from zero, and this assertion is not affected by culture, 2) the relations between the two categories does depart significantly from zero, and this assertion is not affected by culture, 3) the relations between the two categories departs from zero, but this assertion is effected by culture, that is, it cannot be supposed that all six correlations were obtained from the same sampling universe, and 4) the relations between the two categories does not depart from zero across the six cultures, but the cultural relations significantly vary from one another. Again, the assumption that the correlations have been obtained from the same population universe is in question.

Following this quest for bivariate universals, we again attempted to discover a universal underlying factor structure for these relations among behaviors. This question is pursued by 1) common factor analysis, and 2) a study of the patterning of the product-moment correlations in the form of an informal search for ordering factors. (Guttman, 1954; 266-268). The common factor analysis is performed on an r matrix obtained across the six cultures by the conversion of the summed z scores back to r's. This, of course, is a less powerful test of common factorial structure than that originally proposed. However, on the basis of the intervening analyses it appears justified.

The examination of possible patterns of correlations is undertaken informally. In particular, the correlation matrix is examined for evidence of circularity of relations -- or the possibility of a "circumplex structure". (Guttman, 1954). This method, developed by Guttman, and first applied to the analysis of interpersonal behavior by Uriel Foa (Foa, 1961) has become a significant concern to workers in this field within the past few years. This method will be explained in detail below, when the question is pursued. We turn now to the first of these three analyses, the quest for bi-variate universals.

RESULTS

In terms of interpreting the data, it should be made explicit that the subject populations were not randomly selected in a strict sense. The cultures studied were partially chosen on the basis of the interests of the members of the field team. Despite this bias, the world population seems reasonably represented.

A more important departure in the sampling unit is involved in the choice of the children to be observed. Rather than selecting these children to maximize their within-culture independence of one another, the children were included in the sample on the basis of their being members of families who knew one another. (i.e. They were of the same "primary sampling unit".) Thus, it was quite likely that the children in fact interacted with one another frequently, perhaps on a day-to-day basis. The effect of such a procedure is to reduce the independence of cases to an unknown extent. Idiosyncratic factors applicable to particular relationships in the group observed are maximized, as well as other factors related to role dependency. This bias should produce an additional source of variation contributing to the differences between cultures.

The effect should be to inflate between-societal differences beyond what they might otherwise be if a random sampling procedure had been used.

In order to do these analyses, the correlations were converted to "z" scores. To uncover significant departures of relations from zero, mean z's across the six societies were obtained. To simplify computations, a variance score based on the average n was obtained (as in only one case did the N depart greatly from the others - in Africa, where the N was 16 rather than 24). The computations resulted in a standard deviation of 0.0926, which was used in all cases for obtaining significant departures from 0.*

In order to test for significant variances, the sample standard deviations from the six z's were obtained and these were compared with the expected standard deviation if all six variances were drawn from the same distribution. The resulting F-ratios were interpreted by recourse to a chi-square distribution with confidence limits of 0.25 at each end of the distribution. These two analyses were carried out both for the correlations among rates and among proportions. The results are presented in Tables II and III below.*

Rates

Only eight of the 66 relations among rates of behavior were sufficiently variable to reject (at the .05 level) the hypothesis that they had been obtained from the same population universe. Of these eight, seven were obtained where the relations between the two behaviors did not significantly depart from zero. Or, put another way, of the 19 cases where there was found to be a departure of the mean relationship among two categories from zero, in only one of these cases is the variance sufficient to reject the proposition of

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* I would like to thank Professor Lindsey Churchill of Cornell University for devising and working through the details of this procedure.

TABLE II

Tests of Strength and Consistency of Relations Between Behavioral Rates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate		3.12	6.53	9.06	5.78	4.61	8.62	11.09	3.56	3.85	9.74	8.32
(1)		4.16	4.61	.69	2.32	1.89	-.06	.26	.74	2.60	.06	2.68
Reprimands			12.92	8.12	11.92	5.45	16.10	5.07	10.20	4.91	8.95	3.96
(2)			5.39	2.32	3.75	2.69	-.43	.48	2.69	-.59	.07	1.92
Sugg. respons.				6.85	2.98	7.50	6.28	2.71	2.51	4.66	3.34	9.71
(3)				2.91	3.83	3.47	-.99	1.84	1.05	.68	-2.35	1.26
Gives help					11.84	4.87	4.98	8.42	23.38	5.06	17.40	6.53
(4)					3.44	1.04	-.67	1.41	.87	-1.27	.31	.70
Gives supp-app						1.51	5.06	6.80	6.03	6.66	8.22	17.31
(5)						.92	.92	.63	.92	.07	.42	.56
Acts sociable							15.62	1.65	4.34	3.62	10.54	3.18
(6)							1.81	5.33	3.06	-.17	-.99	1.92
Contacts phys.								7.51	13.65	.93	1.73	7.01
(7)								1.74	-1.57	-.98	-.34	-.30
Succorance									7.51	15.70	8.45	5.51
(8)									2.79	.75	-1.05	.20
Calls att. to slf.										6.53	12.70	2.37
(9)										1.58	-.30	.93
Assaults soc.											4.04	2.12
(10)											.75	4.76
Assaults												3.19
(11)												1.30
Symbolic aggr.												
(12)												

Legend:

1. In the top half of each cell is the Chi-Square value obtained in testing for significant variance. Chi-square exceeding 12.832 is significant at beyond the $p < .025$ level. This indicates significant variance between cultures.
2. In the bottom half of each cell is the "t" value obtained in testing for significant departures from zero correlation between behaviors. "t's" exceeding 1.96 indicate a departure from zero, significant at the $p < .05$ level.

consistency of relationship across cultures. In this one case, all of the relations obtained were positive - however, some very strongly so, and others only weakly.

Invariant Significant Relations Between Behaviors

Some behaviors are less variable than others in their relations with other behaviors. Attempting to dominate and reprimanding are particularly likely to be less variant in their relations with others, while contacting physically and assaulting physically, are often variantly related to other behaviors. These latter two behaviors, it will be remembered, have the lowest frequencies of occurrence. This in itself may account for their lack of consistency. To summarize the relations obtained:

1) A child who frequently attempts to dominate others will also be one who frequently reprimands and suggests responsibly to others ($p < .001$). Such a child is also more likely to assault others sociably, and be symbollically aggressive ($p < .01$). To a lesser extent he would be likely to give support-approval to others ($p < .05$).

2) A child who frequently suggest responsibly to others, in addition to attempting to dominate others, is more likely to give support-approval to others and act sociable toward others ($p < .001$). He is less likely to give help to others ($p < .01$). To a lesser extent he is also unlikely to assault physically ($p < .05$).

3) A child who frequently reprimands others, and attempts to dominate others, is also more likely to give support-approval to others ($p < .001$). He also, more probably, acts sociable toward others and calls attention to self ($p < .01$). To a lesser extent he probably gives help to others ($p < .05$).

4) A child who frequently gives support-approval to others, in addition to being more likely to reprimand, suggests responsibly to others ($p < .001$) and attempts to dominate others ($p < .05$). He is also more likely to give help to others ($p < .001$).

5) A child who frequently gives help to others is also likely to give support-approval to them ($p < .001$), and suggest responsibly ($p < .01$) and reprimand others ($p < .05$).

These five behaviors form a partial cluster. Two are not significantly related to one another: attempts to dominate and gives help. Both of these acts share in their assumption of being able to mediate outcomes for others; however, helping is quite supportive in affect, whereas attempting to dominate is quite negative.

Reprimanding and *suggesting responsibly* are significantly related positively to one another across societies. However, they are also highly variant in their relationship. In New England their correlation is +.04, essentially zero, whereas in Africa their correlation is .79. In four of the six societies, the correlation among these two categories is (at the .05 level) significantly different from zero. In Okinawa, the correlation is +.19. Thus, it may be that two of the cultures are different from the other four on this dimension. However, the over-all effect is so large ($p < .001$) as to cause us to treat lightly this culturally-related variance.

In general, then, we suspect that we have found a broad tendency for mediating-type behaviors to cluster together in particular children within each society and not in others. However, the differential relations of these behaviors to others outside the cluster indicates that they are not in all ways equivalent. We shall pursue this analysis shortly.

6) A child who frequently is *succorant* is also likely to be one who *acts sociable* ($p < .001$) and *calls attention to self* ($p < .01$).
7) A child who *acts sociable*, in addition to being *succorant* is also highly likely to *call attention to self* ($p < .001$).

Here a second cluster seems to be present: children who are highly dependent on others for attention, support and help, because they are dependent, are also likely to be sociable.

The third cluster is small, and partially overlapping with the first:

8) A child who is more likely to use *symbolic aggression* is also likely to *assault physically (sociably)* ($p < .001$). In addition, those who frequently use *symbolic aggression* and *assault (sociable)* are also likely to *attempt to dominate others* ($p < .01$).

Attempting to dominate others is a mode used both by symbolically aggressive children and by responsible children. In like fashion, sociability is likely to be frequently found in both responsible children and in dependent children.

The consistency and meaningfulness of these three semi-independent behavioral clusters gives high credibility to the proposition that there do exist universal patterns of interpersonal behavior. This is not to say that cultures do not effect these patterns. It is likely that they have some modest effect on the relations reported here; it is also so that they have a marked effect on relations among other behaviors to be reported in a subsequent section. However, as our primary quest is for the detection of cross-cultural relations among behaviors, we may conclude that such relations do exist.

Behaviors Consistently Negatively Related (Rates)

In no case were the rates of two kinds of behavior consistently negatively related to one another. This fact is related to the observation that there were few negative correlations between the behavioral rates. Within a society, if a child was more likely than another child to give help, say, he was also more likely to seek help from others. Thus, a general factor in behavior across the six societies seems to be the child's over-all social participation. Some children are more integrated into social life than are others. When we report the relations among act proportions, we shall see that there are negative relations between certain kinds of acts when social participation rate is held constant.

Variable Relations Between Rates of Behaviors

Now we turn to the question of which relations among behaviors are significantly effected by culture. Eight relations between acts are so classified. In Appendix A can be found the correlation matrices obtained for each of the six separate cultures. One of these relations - that between reprimanding and suggesting responsibly - achieves a very significant departure from zero despite this large variance. In four of the six societies (Africa, Philippines, Mexico and India) the obtained correlation was significant at the .05 level or better. In Okinawa, the obtained "r" was .20, whereas in New England it was .04. Thus, in the four cultures mentioned, particularly Africa, a child who is a frequent reprimander is also likely to make frequent responsible suggestions to others. On the other hand, in New England, the child who reprimands may or may not be the one who also is making the responsible suggestions.

The other seven correlations which were demonstrated to be effected by culture achieved no over-all departure from zero. In each of these relations, sometimes the correlation between the two behaviors was significantly positive, sometimes significantly negative, and more often significantly departing from zero in neither direction.

Contacting physically was involved in three of these variable relations. In Mexico ($r=-.491$, $p<.05$) and Africa ($r=-.392$, p=n.s.) physical contact with others was negatively related to reprimanding. If a child of these cultures engages in physical contact a great deal, he is unlikely to be a frequent reprimander of others. On the other hand, in Okinawa, children who are frequent reprimanders are also children who engage in frequent physical contact with others ($r=-.547$, $p<.01$). (For the remaining three societies the correlation was about zero).

Contacting physically was also variably related to being sociable with others. In India it was highly likely that children who were frequently in physical contact with others were also more apt to be engaged in sociable interaction with others ($r=.641$, $p<.01$). This also tended to be the case in the Philippines ($r=.404$, p=n.s.). However, in the other four cultures there seemed to be no particular relation between these two acts.

Contacting physically was further variably related to calling attention to oneself. In Africa children who physically contacted others were unlikely to call attention to themselves. ($r=-.584$). In the other five cultures there was no relation between these two behaviors, except perhaps in Okinawa where the direction was the other way. Children who were frequently physically contacting others were also more likely to be calling attention to themselves ($r=.388$, p=n.s.).

Calling attention to oneself is also variably related to giving help to others. In Okinawa children who give help to others are also likely to be frequently calling attention to themselves ($r=.759$, $p<.01$). However, in none of the other five societies did any directional relation appear.

Giving help was variably related to assaulting physically. In Africa, children who were frequent help-givers were also frequent physical assaulters of others ($r=.525$, $p<.05$). In contrast, children in Okinawa who were frequent help-givers were infrequent assaulters ($r=-.511$, $p<.05$). The other four cultures fell somewhere in between these two extremes.

Sociable physical assaults were variantly related to the child's succorant behavior. In Mexico, children who were dependent were also children who playfully physically assaulted others ($r=.621$, $p<.05$). At the other extreme were Philippine children who, if they were dependent, were unlikely to engage in playful physical assaults with others ($r=-.441$, $p<.05$). For the other four societies the correlations were around zero.

The last significantly variable relation was between symbolic aggression and giving approval-support. In Africa, children who are supportive of others are also likely to be involved in symbolic aggressions with others ($r=.518$, $p<.05$). Thus, they tend to be either neither aggressive nor supportive, or they are both. By contrast, the children of Mexico are one or the other but not both. That is, the children who are supportive of others are less symbolically aggressive, whereas the symbolically aggressive children are not supportive of others ($r=-.445$, $p<.05$). The other societies fall between these two extremes.

If one is to accept these sample variations as reflecting real variation in relations between these behaviors in different societies, then on the basis of this analysis one would conclude that Africa and Okinawa are least similar to one another in behavioral structures. As such they might reflect alternative cultural patterns for ordering social roles. In Africa, it would seem, expression of negative affect is permitted in those who enact the nurturing role. African children who are high on helping, suggesting responsibly, and giving support-approval, are also high on reprimanding, assaulting physically, and symbolic aggression. In Okinawa, the expression of aggression is prohibited from those who nurture. These children are less likely to use reprimands, symbolic aggression, or physical assaults. They are permitted, however, to call attention to themselves.

These suggestions of cultural differences as observed between samples, are perhaps premature. The evidence is not yet sufficient to interpret these results as true cultural differences, although the temptation to do so is compelling.

Proportions

In this section we parallel with proportions the analysis which we have just completed for act rates. Our reason for doing so is that by using the proportion scores we get a better idea as to which behaviors are invariantly negatively related to one another. This is so, of course, because we have taken out the overriding factor of amount of social participation. Here the association is not between the frequencies of the behavioral enactments, but rather with the associations among probabilities of enacting behaviors, given the presence of a social act in the first place.

Invariant Significant Relations Between Behavioral Proportions

In comparison with the analysis among rates of behavior, there is a slightly larger percentage of significant relations among proportions. Twenty-eight correlations were found to depart significantly from zero (at the .05 level). Of these 28 correlations, 9 were found to also vary significantly across cultures. Thus, nineteen bi-variate relations were found to consistently depart from zero across the six cultures.

As would be expected with proportion scores, the vast majority of these consistently significant relationships are negative in sign. That is, when the child acts, the more likely he is to do x, the less likely he is to do y. Seventeen out of the nineteen correlations are negative. The two positive correlations are between 1) symbolic aggression and assaulting sociably and 2) giving approval and giving help. These correlations were also significant in the rate analysis, and so we shall say no more about them here.

The pattern of negative correlations is interesting in that it complements the correlational pattern found in the relations among rates. There, it will be

TABLE III

Tests of Strength and Consistency of Relations Between Behavioral Proportions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate (1)		1.46 1.57	1.15 .96	5.45 1.40	8.35 .36	7.62 -2.67	3.39 -1.54	7.00 -2.56	4.71 -1.10	0.07 1.41	8.75 .01	6.83 .73
Reprimands (2)			16.99 2.28	2.39 -1.02	6.63 .63	2.05 -1.86	13.82 -1.98	1.40 -1.70	7.84 1.31	5.50 -2.53	7.77 -.79	2.05 -2.15
Sugg. respons. (3)				5.23 .57	13.23 .60	4.90 -2.08	19.72 -1.84	1.88 .88	2.12 -1.89	3.36 -1.11	2.02 -2.80	9.84 -2.48
Gives help (4)					5.73 2.17	7.02 -3.73	1.24 -2.09	10.58 -.34	13.28 -.47	2.40 -2.08	15.06 -.95	3.31 -2.25
Gives supp.-app. (5)						5.11 -3.62	10.54 .72	9.54 -.89	3.83 -1.40	17.94 -1.58	3.44 -1.51	5.51 -2.43
Acts sociable (6)							6.54 1.83	7.77 1.67	5.31 -.27	3.05 -3.06	6.03 -1.78	2.96 -2.02
Contacts phys. (7)								15.68 2.48	4.20 -2.15	2.40 -1.70	1.00 -.89	6.34 -1.71
Succorance (8)									7.75 -.90	8.53 -1.81	1.75 -1.56	2.13 -3.08
Calls att. to self (9)										6.39 -.31	5.35 -.59	3.54 -1.35
Assaults phys. (10)											7.28 .54	.96 2.89
Assaults (11)												20.77 1.60
Symbolic aggr. (12)												

1. In the top half of each cell is the Chi-square value obtained in testing for significant variance. Chi-square exceeding 12.821 is significant at beyond the p = .025 level. This indicates significant variance between cultures.
2. In the bottom half of each cell is the "t" value obtained in testing for significant departures from zero correlation between behaviors. A "t" exceeding 1.96 indicates a departure from zero, significant at the p=.05 level.

remembered, we found three clusters of behaviors:1) a responsibility-nurturance-dominance cluster, 2) an aggression cluster, and 3) a dependence cluster. In the associations among proportions we obtain negative relations between these clusters (whereas in the correlations among rates the clusters were mainly orthogonal to one another). Thus, if we take out the variable of how much a child interacts with others, it can be seen there are three general modes of children's response to others, which tend to preclude one another: nurturance, aggression, and dependence. Let us document this:

> *Cluster 1: Nurturance.* *Gives help*, which is at the center of this cluster, is negatively related to: *acts sociable* ($p < .001$), *contacts physically* ($p < .05$), *assaults sociably* ($p < .05$) and *symbolic aggressions* ($p < .05$).

Sociability and physically contacting tend to be part of the dependence cluster. (Helping is negatively correlated with dependence, but the size of the correlation is small). The two aggressions form the aggression cluster. The behaviors which in the rate analysis were part of the nurturance cluster, tend to relate in the same way to the other two clusters, though less strongly than does helping:

> A child who *gives support-approval* is unlikely to *act sociable* ($p < .001$) and is unlikely to use *symbolic aggression* ($p < .05$, aggression cluster).
> A child who likes to *suggest responsibly* with a high probability is unlikely to *act sociable* ($p < .05$, dependence cluster), *assault physically* ($p < .01$), or be *symbolically aggressive* ($p < .05$, aggression cluster).
> A child who is likely to *attempt to dominate* is unlikely to *act sociable* ($p < .01$) or to act *succorant* (dependence cluster, $p < .05$).
> A child who is likely to *reprimand* is unlikely to *assault sociably* ($p < .05$) or to use *symbolic aggression* ($p < .05$).

The only noticeable differences (other than fewer relations obtained for these other behaviors) are that *dominating* is related negatively only to the dependence cluster, and not to the aggression cluster, while *reprimanding* is negatively related only to the aggression cluster and not to the dependence cluster. (However, reprimanding is related negatively to the dependence cluster in some cultures. This was one of the significantly variant relations.) That dominance does not negatively relate to aggression is not surprising in that the aggressions have a dominance component in them (while dominance has an aggressive component in it.)

Cluster 2: Aggression. Symbolic aggression is at the center of the aggression cluster. It is negatively related to reprimands ($p < .05$), suggests responsibly ($p < .05$), gives help ($p < .05$) and gives support-approval ($p < .05$).

Symbolic aggression, then is negatively related to all of the nurturance cluster, except for attempts to dominate, which is at the periphery of the cluster, and more similar to aggression than any of the others. In addition to relating negatively to nurturance, symbolic aggression is related negatively to two of the behaviors making up the dependence cluster: succorance ($p < .001$) and acts sociable ($p < .05$).

Assaults sociably relates negatively only to two of the nurturance cluster acts: reprimands ($p < .05$) and gives help ($p < .05$).

Assaults physically (non-sociably) is negatively related only to suggests responsibly ($p < .01$).

Perhaps this is because a physical assault is generally an unpremeditated act, whereas being responsible comes only after much socialization. It may be the least unpremeditated of all the acts categorized in this study. Thus, the aggression cluster is consistent. No act within the cluster relates significantly positively to any act outside of the cluster. Whenever relations obtain, they are negative.

Cluster 3: Dependence. Acts sociable is negatively related to the nurturance cluster, with attempts to dominate ($p < .01$), suggests responsibly ($p < .05$), gives help ($p < .001$) and gives support-approval ($p < .001$). It is also negatively related to the aggression cluster, with assaults sociably ($p < .001$) and with symbolic aggression ($p < .05$).

Contacts physically is negatively related to the nurturance cluster only. A child who is likely to contact others physically is unlikely to give help ($p < .05$) or to reprimand ($p < .05$). It is also negatively related to calling attention to the self ($p < .05$). This last act is not a consistent part of any of the three clusters. Contacts physically is not significantly related to aggression.

From our analysis of proportions it would seem that perhaps sociability is a more prototypic representative of this cluster than is dependence. It may be, however, that sociability's greater external validity is due to its greater frequency and stability. Or it could be that this cluster is less obviously dependent in the succorant sense, but rather is dependent in the sense of being needful of the presence of others and their interactions, whether these be nurturant actions or not.

On the other hand, being dependent is more antithetical to aggression than it is to nurturance. If a child is dependent he is quite unlikely to use symbolic aggression ($p < .001$). He is also unlikely to attempt to dominate others ($p < .05$). Thus, while acting sociably is negatively related to both nurturance and aggression, being dependent tends to be negatively related to aggression but orthogonal to nurturance. Physical contact seems to be negatively related to nurturance, and orthogonal to aggression, however.

The over-all pattern emerging is that there are three clusters of behavior which tend to be negatively related to one another. This suggests a universal human condition, which is more basic than the influence of culture.

Significantly Variant Relations Between Proportion Scores.

Yet culture is operative, too. This can be demonstrated by turning to the nine relationships between proportion scores which were significantly effected by culture. In Appendix B are listed the correlation matrices obtained for each of the six separate cultures.

Physical contact with others was one of the behaviors which was most affected by culture. In four of the six cultures, it was negatively related to suggesting responsibly (Philippines,-.46; Africa, -.43; Mexico, -.38; and

India, -.15). In New England, however, the relation was positive (r= .34). In Okinawa, the correlation was +.13.

This pattern is duplicated for the relation of contacting physically with reprimanding (another category in the responsibility-nurturance cluster). In the same four societies the relation is negative (Africa, r=-.55, Mexico, r=-.54, Philippines, r=-.18, and India r=-.15.) Again, in New England the relation is contrastingly positive (r=.30). In Okinawa, the correlation is +.14. The consistency of these two patterns with one another suggests that a culturally variant relation truly exists between physical contact and the responsibility dimension within the nurturance-responsibility cluster. In most societies children who are responsible are unlikely to engage in physical contact with others. In New England, however, children who do one are not unlikely to do the other.

Physical contact also has a variant relation to dependence. For five of the six cultures the association is practically non-existent. In Africa, however, the correlation is highly positive (r=.73). Children who engage in a high proportion of physical contact in Africa are also proportionately highly dependent. Why this is so is not yet clear.

Suggests responsibly is a second category which has highly variant relations across cultures. In addition to its variant relation to physical contact, it is also variant in its relations to reprimanding and giving support-approval. In five of the six societies the relation of responsible suggestions to reprimands is positive. Children who proportionately enact more responsible suggestions also enact more reprimands. Again, in New England, however, the relation is reversed (r=-.42). In New England, then, contacting physically relates positively to both reprimanding and suggesting responsibly but these are related negatively to one another. The modal cultural pattern is that suggesting responsibly and reprimanding, as parts of the responsibility-nurturance cluster, are related positively to one another, and each relates negatively to physical contact which is most closely associated with the dependence cluster. Why the New England pattern should obtain is not understood.

Suggests responsibly has a significantly variant relation to support-approval, as well. In New England the relation is positive (r=.54), while in Africa it is negative (r=-.40). The other four cultures fall between these two extremes. Thus, it is evident that suggesting responsibly, as a proportion score, has a variant relation to much of the nurturance cluster and also to one of the indices of the dependence cluster.

In the aggression cluster, physical assault and symbolic aggression vary in their relation by culture. In five of the six cultures the relation is around zero (demonstrating the independence of proportion of act scored as physically assaulting from the more socialized aggression cluster). In Okinawa, however, the relation is strongly positive (r=.759). Children who physically assault are more likely to also use symbolic aggression. Okinawa also accounts for the significantly variant relation between physically assaulting and giving help. In the other five societies there is no relation between these two categories. In Okinawa, however, the relation is highly negative (r=-.65). Children who are proportionately high assaulters are proportionately low helpers. Thus, it would seem that aggressive children in Okinawa are children who are really aggressive.

Sociable assault is significantly variant in its relation to support-approval across cultures. In five of the six cultures the correlation is negative (in Mexico and the Philippines significantly so). In India, however, the relation is significantly positive (r=.58). Perhaps the sociability component in sociable assaults is greater in India than most other countries.

The last significantly variant relation to be reported exists in the relation between helping and calling attention to the self. In five of the six societies, the correlations are negative. In Okinawa, however, the correlation is positive. It is not yet clear why this should be the case. As calling attention to self is not part of any recognizable cluster, the relation is more difficult to interpret at this point.

While we have found the existence of culturally-coincident variance in the relations between some of the behaviors, this variance has not totally masked the presence of universally invariant relations between behavioral proportions. While it is felt that these variant patterns reflect real differences between cultures, we are not yet in a position to be able to account for these differences.

Summary of Rates and Proportions

We have begun by answering the question as to whether individual categories of behavior demonstrated invariant relationships across societies. This analysis has been pursued using both category rates and category proportions. While we have reported bivariate relations which vary significantly with culture, our primary quest has been for first-order universal relations between behaviors.

The results of the rate and proportion analyses were equally fertile. Consistent bivariate relations significantly departing from zero (at the .05

level of confidence) were obtained for 18 relations between rates (27%) and for 19 relations between proportions (29%). The relations between rates were overwhelmingly positive, those between proportions primarily negative. From these analyses it can be concluded, with a high degree of confidence, that there are consistent relations between kinds of behaviors across cultures.

Of the remaining relations, most were consistent but not significantly departing from zero. There were 40 relations between rates (61%) which were non-significant, and consistently so, across cultures. There were 38 relations between proportions which did not significantly depart from zero, consistently so, across cultures. The remaining relations were those which were significantly affected by culture. Thirteen percent of the relations between rates were culturally variant. Of these 8 relations, 7 were reduced to insignificant departure from zero by culture effects. One relation, that between suggests responsibly and reprimands, departed significantly from zero despite obvious cultural variance.

Of the proportion relations, 14% were effected by culture. Of these, six (9%) were reduced to an insignificant departure from zero, whereas three (5%) departed from zero relation across cultures, despite culture-determined variance.

The conclusion to be drawn from these analyses is that first-order universal relations between many categories of behavior do exist; further, that other relations between categories are affected by cultural variance. However, the primary relation between these categories is one of consistency.

This analysis of the bi-variate relations has yielded more than a report of single uniformities between behaviors. It has been suggested that there may be clusters of behavioral categories which perhaps are related by virtue of common properties. In particular, three clusters have been suggested: 1) a mediational cluster consisting of the categories of helping, suggesting responsibly, supporting-approving, reprimanding, and attempting to dominate, 2) a dependence cluster consisting of acting sociably, acting dependent and seeking physical contact with others, and 3) a social aggression cluster consisting of playful assault and symbolic aggression. Further, it would appear from the proportions analysis that these three behavioral clusters may be somewhat exclusive of one another - children characterized by one set of behaviors are unlikely to be characterized by behaviors from the other two clusters as well. This tendency would seem to suggest that factors underlying these various clusters may have some relation themselves to one another.

These observations encourage us to pursue the analysis by recourse to multi-variate techniques. In the following section, we shall focus on two such examinations of the data, based on common factor analysis and order factor analysis.

Common Factor Analyses

We now want to ask to what extent the correlations between these twelve categories of behavior can be represented parsimoniously by a set of underlying factors. Our procedures for doing so are three-fold.

1) The "z" matrix of the average correlations existing between each two behavioral categories is converted back to an r matrix.

2) This r matrix is then factor analyzed with a principal components factor solution (Harmon, 1960), employing unity as the communality.

3) After inspection the first n number of factors are given a varimax rotation.

These procedures are performed for both the correlation matrix of category rates and category proportions.

The Factor Analysis of Behavioral Rates

Principal Components Solution

The principal components factor analysis has two characteristics: 1) an orthogonal factor space, and 2) maximization of the variance extracted by each prior factor. The first characteristic means that the factor dimensions obtained are independent of one another; the second, that the first factor obtained will be a general factor maximizing the loadings of each category along the dimension.

In Table IV is presented the obtained principal components factor matrix. In Table V, the general statistics for this analysis are reported: lambda, percentage of variance accounted for, and cumulative variance accounted for. Looking first at Table V we see that five factora have Lambda's with traces larger than 1.0. This would indicate that these five factors merit serious consideration for interpretation. In terms of variance accounted for, it can

TABLE IV

Principal Components Factor Matrix of Rates

	1	2	3	4	5
Attempts to Dominate	.60754	-.38325	-.01041	.21202	.27446
Reprimands	.69370	-.01197	-.28441	-.04797	-.02404
Suggests responsibly	.73552	.07965	-.22600	-.03882	.33862
Gives help	.40308	.19371	-.41085	-.12281	-.38671
Gives support-approval	.50552	-.00973	-.51043	.21716	-.16104
Acts sociable	.56928	.39365	.42832	.10480	-.07354
Contacts physically	-.00844	.34209	.16314	.81935	-.06160
Succorance	.34644	.52008	.53305	-.02580	-.14534
Calls attention to self	.41386	.07864	.33334	-.53774	-.24796
Assaults sociably	.22459	-.68075	.42452	.03212	.10156
Assaults	-.09137	-.36606	-.05377	.15197	-.77321
Symbolic aggressions	.38941	-.52666	..32910	.14937	-.15661

TABLE V

Principal Components Factor Analysis of Rates
General Statistics

Factor Variable	Lambda	% Variance Accounted For	Cumul. Variance Accounted For
1	2.645	21.96	21.96
2	1.614	13.45	35.41
3	1.458	12.15	47.57
4	1.130	9.41	56.98
5	1.091	9.09	66.07
6	.845	7.04	73.11
7	.777	6.48	79.59
8	.686	5.72	85.30
9	.560	4.67	89.97
10	.463	3.86	93.83
11	.396	3.30	97.14
12	.344	2.86	100.00

be seen from this same table that the first eight factors individually account for more than five percent of the variance - indicating that their analysis might be worthy of attention. From Column three of this table, it can be seen that the first five factors cumulatively account for 66.1% of the total variance, and the first eight eight factors account for 85.3% of the total. Before rotations were undertaken, the unrotated solution was examined in order to determine the likely sources of variances.

It can be seen, as expected, that factor one is a general factor: nine of the twelve categories have positive loadings over .30. Most highly loaded are suggesting responsibly and reprimanding. Following in order of size of loading are attempting to dominate, acting sociable, gives support-approval, calls attention to self, gives help and symbolic aggression. Assaults sociably is less than .30 but still positive, while contacts physically and assaults have negligible negative loadings on this first factor. Thus, by the generality of this factor it would appear to be a general factor of social participation. If a child is likely to engage in much of almost any kind of behavior, he is likely to be a high participator in most other categories of behavior as well. This is what was indicated in our earlier bi-variate analyses: rate of social participation itself, is a general factor ordering the correlations among the children's social behavior.

Factor two, a bi-polar factor , reflects dependence on one end (acts sociable, succorance and contacts physically) and aggression on the other end (assaults sociably, symbolic aggressions, attempts to dominate, and assaults). This reflects the tendency we found in our bi-variate proportions analyses: aggression and dependence categories are negatively related to one another.

Factor three, also a bi-polar factor, reflects nurturance at one end (gives support-approval, gives help, and below .30, suggests responsibly and reprimands.) and dependence and aggression at the other end (succorance, assaults sociably, acts sociable, calls attention to self, and symbolic aggressions). The appearance of this nurturance factor and its tendency toward mutual exclusiveness with the dependence and aggression factors reflects, too, the trends which appeared in our bi-variate analyses of rates and proportions.

In factor four, we find only two categories of behavior with loadings over .30: contacts physically (with a loading of .819) and, at the other end, calls attention to self (with a loading of -.538). This suggests a self-prominence, other-directedness dimension, but with only two categories involved, it is largely uninterpretable.

Factor five involves three categories with loadings over .30. However, only one assaults, has a high loading (-.773). Gives help is loaded in the same direction, (-.387), while suggests responsibly is positively loaded on this factor (+.339). This dimension suggests a factor of impulsivity -- helping and assaulting indicating impulsive, perhaps innately determined types of acts, while responsibly suggesting reflects a highly socialized type of behavior which is generally not impulsive. However, helping behaviors may also be argued to be highly socialized behaviors, although it has been asserted that nurturance is an innate tendency, particularly of females. Thus, we suspect these two behaviors - giving and assaulting physically, are more likely controlled by their instigation, whereas suggesting responsibly is more likely to be controlled by its consequences.

Beyond the fifth factor, the category loadings are moderate, and infrequent. For this reason, it was decided that the Lambda figure of 1.0 minimum should be used as the outside basis for number of factors to be rotated.

Varimax Rotations

Taking 1) 10% or more of variance individually accounted for as a criterion for minimum number of factors to be varimax rotated and 2) Lambda of 1.0 or greater as the maximum number of factors to be accounted for, the first three, four, and five of the principal component factors were rotated.

The Three Factor Rotation

In the rotation of the first three principal component factors, we find fully emerged the dimensions suggested from our bivariate analysis. The results of this rotation can be found in Table VI.

Factor I: Mediation. Five categories of behavior are loaded on the first factor. Thus, its nature of general social participation has disappeared.

TABLE VI

Varimax Rotation of First Three Factors of Principal Components Factor Solution

	1	2	3
Attempts to dominate	.45989	.01738	.55163
Reprimands	.71980	.11795	.17390
Suggests responsibly	.72286	.23165	.14906
Gives help	.58181	.04061	-.16923
Gives support-approval	.71032	-.10672	-.01567
Acts sociable	.21124	.77257	.14496
Contacts physically	-.08445	.31720	-.18964
Succorance	-.02022	.82112	.00115
Calls attention to self	.12664	.44355	.27532
Assaults sociably	-.12757	-.06512	.82071
Assaults	-.06274	-.30716	.21669
Symbolic aggressions	.07070	.04509	.72821

These five categories are all characterized by the attempt to mediate for others. Most highly loaded on the factor are suggests responsibly (.723), reprimands (.720) and gives support-approval (.710). With lesser loadings are the categories of gives help (.582) and attempts to dominate (.460). In each of these categories the focus is on the person, or the behavior of the person, who is the target for the child's act: he is being told what he should do for his own good, or the good of the social unit of which they are both members (suggesting responsibly); he is being told that he shouldn't have done what he has already done (reprimanding); he is being helped in what he is trying to do; he is being told that what he has done, or who he is, is good (giving support-approval); and he is being told what he should be doing, irrespective of who will benefit from his act (attempting to dominate).

Thus, the primary component is one of attempting to mediate behavioral choices for others. But the component is not simply dominance; otherwise the dominance category would be more highly loaded on this factor.

Similarly, it is not merely nurturance, or helping would be more highly loaded on the factor. These two categories do share the component of mediating the outcomes or behaviors of the target person. In attempting to dominate, the child's concern is that the other should conform to his wishes. In helping, the child's concern is that the target person succeed in attaining his objective. Perhaps these categories share lesser loadings because in the first case, there is too much self-concern, and in the second, too much other-directed concern. If one removes from consideration acts which are going to clearly benefit the self or the other, then one is left with a focus which indicates that the action is for the common good - that is, the functional significance of the act is that it is a responsible offering of sanction to the target-person.

This factor is uni-polar in nature, indicating that the child's level of mediation for others is independent of other kinds of behaviors.

Factor II: Social Depriving. Common to the categories loaded on factor II is the component of loss to the target at the hands of the actor. An aggressive component can be found in each of the categories. There is the assertive component of one person losing at the expense of the winning actor. Most highly loaded on this factor is the category of playful sociable assault (.821). The child playfully physically assaults others. In such wrestling and jostling, of course, one child stalks the other, and the culmination is that one child gets thebetter of the other. Similarly highly loaded is the category of symbolic aggressions (.728). Here the combat doesn't involve defeat through physical injury to the target, but rather symbolic defeat or injury through the mechanisms of verbal assaults, ridicule, and challenges to competition. Again, the effect is consistent: somebody wins and somebody loses. If the actor is successful, the target is deprived of some status, security, support, or symbol of prestige which he held prior to the action.

Attempting to dominate target is again a win-lose proposition. Either the child succeeds in dominating the other child or he does not. If unsuccessful, the child who attempted to dominate loses a little face. If successful, the dominating child adds prestige to himself, at the expense of his target.

A central fact to be noted in considering this dimension is that physical assaults are not particularly loaded on this factor. That is, when two children are observed getting into a serious fight, this kind of behavior is pretty independent of their social aggressions, or a predisposition to them. This would seem to indicate that physical assault is not governed by the same conditions. We suspect that serious physical assault tends to be unpremeditated. The child acts first, and thinks later.

This notion has a suggested parallel in the American legal system. Here, it will be remembered that our law distinguishes between premeditated and unpremeditated crimes, the former implying a higher "degree" of responsibility, and therefore carrying a greater punishment. It is as if there is a recognition in our culture that less can be done about controlling unpremeditated aggression. Irrespective of shaping method, severity of punishment, schedule of reinforcement and so on, some aggressions will be spontaneously triggered and recur. Socially contrived aggressions, on the other hand, are something which can be drawn under the control of their effects. Indeed, it is precisely the social consequence of the act which gives it its significance.

This factor of social deprivations reflects the correlations suggested in our bivariate analyses. This factor, like the first obtained, is unipolar in nature. It indicates that a child may be high or low on this factor, irrespective of what else he does interpersonally.

Factor III: Interpersonal Seeking. The third factor also parallels that which was suggested by the correlational analyses. Here, the common component is that the child's behavior is directed toward another person. Without the participation of this other person, the behavioral intent is thwarted, and the need of the child remains unfulfilled. In all cases, an interpersonal mediation is required before the intent of the act is realized.

Most highly loaded on this dimension is the category of acting dependent, succorance (.821). The child seeks support, help or direction from another; he needs the other's sanction in order to proceed. Thus, the other mediates valued outcomes for the child. Also highly loaded on this factor is the child's acting sociable (.773) - that is, he initiates interpersonal interactions with others and responds favorably to such inititations by others. This category again indicates that the child is seeking others out. He reveals their value for him.

Less strongly loaded on this factor, but still significant, is calls attention to self (.443). Again, the point is clear. The child seeks the attention of the others. Without this attention, his performances are not complete. Just barely loaded above .30 is contacts physically (.317). This category is not inconsistent with the dimension. The child physically seeks out others, and is comforted by his physical contact with them. The interpersonal physical touch is the end-point of the behavior.

In all cases,then, the intent of the child's behavior is to seek from others something which is of value to the child himself - whether it be their help, direction, support, friendliness, attention, or their physical touch.

One category, assaults, has a negative loading exceeding .30 on this factor (-.307). Thus, there is a slight tendency for children who seek interpersonal mediations not to physically assault others. (They tend not to bite the hand that feeds them.) However, this is a slight tendency, and for the most part the factor can be considered to be unipolar. It is independent of the first two factors: children who seek interpersonal mediations may or may not perform interpersonal mediations themselves; similarly, they may or may not enact social deprivations.

The Four Factor Rotation

The results of the four factor rotation are very similar to those obtained in the three factor analysis. The loadings are compared in Table VII . The fourth factor obtained is made up of two categories at opposite ends of the dimension. Positively loaded is contacts physically (.876) and negatively loaded is calls attention to self (-.533). In both categories, the mediation is from others. But in the first case, the focus is on getting to the other person, whereas in the second case it would seem to be to get the other to center on the actions of the self. In the first case, the touch is mutual; whereas in the second, the attention is asymmetric The dimension suggests a kind of narcism where in the one case the satisfaction is obtained by getting others to focus on the self, and in the other, the satisfaction seems to come from the inclusion of the self as part of the other.

In comparing the communality estimates used for each of the categories in the three and four factor rotations (see Tables VIIa,VIIb and VIIc), it is clear that most of the categories are unaffected by the increase from three

TABLE VII a

Varimax Rotation of First Four Factors of Principal Components Factor Solution

		1	2	3	4
1	Attempts to dominate	.47332	-.57584	.02929	.06756
2	Reprimands	.71649	-.14357	.14005	-.10475
3	Suggests responsibly	.71920	-.11795	.25058	-.07724
4	Gives help	.57335	.20282	.05127	-.10670
5	Gives support-approval	.72129	-.02286	-.12230	.16613
6	Acts sociable	.21251	-.13800	.76559	.15217
7	Contacts physically	-.04426	.01512	.21398	.87583
8	Succorance	-.02658	.02812	.81758	.07338
9	Calls attention to self	.09700	-.13686	.51538	-.53290
10	Assaults sociably	-.12076	-.81173	-.02511	-.14489
11	Assaults	-.05158	-.25441	-.31043	.06768
12	Symbolic aggressions	.08220	-.74033	.06872	-.00828

TABLE VII b

Comparison of Factor Loadings from the Varimax Rotations of the First Three and Four Factors Obtained in the Principal Components Solution

Factor I	3 factor loadings	4 factor loadings
Gives support-approval	.710	.721
Suggests responsibly	.723	.719
Reprimands	.720	.716
Gives help	.582	.573
Attempts to dominate	.460	.473
Factor II		
Assaults sociably	.821	-.812
Symbolic aggressions	.728	-.740
Attempts to dominate	.552	-.576
Assaults	.217	-.254
Calls attention to self	.275	-.118
Factor III		
Acts dependent (succorance)	.821	.818
Acts sociable	.773	.765
Calls attention to self	.443	.515
Contacts physically	.317	.214
Assaults	-.307	-.310

TABLE VIIc

Final Communality Estimates

	1	2	3
1	.516	.561	.045
2	.562	.565	.033
3	.598	.600	.002
4	.369	.384	.015
5	.516	.563	.047
6	.662	.673	.011
7	.144	.815	.671
8	.675	.675	.000
9	.289	.578	.289
10	.694	.695	.001
11	.145	.168	.023
12	.537	.560	.023
	47.6%	57.0%	9.41%

to four factors. The exceptions to this statement are provided by the categories of contacts physically and calls attention to self. These are, of course, the two categories which appear by themselves in the fourth factor. It would seem, then, that the presence of the fourth factor is irrelevant to the interpretation of the structure existent among the first three factors.

The Five Factor Rotation

The inclusion of the fifth factor in the rotated space does not alter in any appreciable way the structure obtained in the three and four factor rotations (see Table VIII). Factors I, Mediation, II, Social Depriving, III, Interpersonal Seeking, are again present, as is Factor IV, with its alter-centered vs. ego-centered dimension. The fifth factor, is composed of only two categories. At one end is the category of assaulting physically (-.855) and at the other end, suggesting responsibly (.461). This factor, previously emergent in the fifth factor of the unrotated principal components solution, suggests the dimension of impulsivity. As stated earlier, the physical assault is probably controlled to a greater extent by its instigation while responsibly suggesting behavior is more likely controlled by its effects. If, indeed, this is a meaningful interpretation of the data, it is likely that the factor is correlated with the age of the child. However, there are too few categories loaded on the factor to attach much confidence to the interpretations offered.

Summary: Factor Analysis of Rates

The principal components solution revealed five factors as worthy of interpretation. These five factors accounted for 66% of the variance. This indicates that the relations between behavioral categories existing across

TABLE VIII

Varimax Rotation of First Five Factors of Principal Components Factor Solution

	1	2	3	4	5
Attempts to dominate	.43410	-.61605	-.01734	.08364	.24723
Reprimands	.70605	-.15666	.14448	-.11681	.08698
Suggests responsibly	.66301	-.17843	.16164	-.06628	.46113
Gives help	.61209	.23745	.13474	-.14397	-.25200
Gives support-approval	.74253	-.01462	-.07756	.14198	-.10740
Acts sociable	.20097	-.12470	.76605	.14833	.11886
Contacts physically	-.01959	.04352	.23144	.87147	-.05941
Succorance	-.03015	.05341	.82732	.06766	.06034
Calls attention to self	.09647	-.11333	.55935	-.54520	-.08347
Assaults sociably	-.13998	-.81805	-.01964	-.12548	-.02197
Assaults	.05055	-.14818	-.09990	.02143	-.05512
Symbolic aggressions	.09364	-.71424	.13309	-.00982	-.21779

cultures can be meaningfully studied by recourse to summary dimensions.

Interpretation of the unrotated matrix specified a general social participation factor, a bi-polar deprivation-seeking factor, and a bi-polar mediation non-mediation factor. In addition, two more specific factors were suggested: an egocentrism-altercentrism factor, and an impulsivity factor.

The various rotations of the principal components matrix resulted in no appreciable effect upon the weaker fourth and fifth factors. However, the rotation of the first three factors resulted in the general activity factor and the two bipolar factors being converted into three independent unipolar factors. These three factors labelled mediation, deprivation, and seeking, reflected the behavioral clusters suggested in the bi-variate correlational analyses: nurturance, aggression and dependence. The three factors account for 47.5% of the variance. This indicates that approximately half of the common variance averaged across cultures can be described in terms of these three independent factors. It can be concluded that it is reasonable to look for these three dimensions of behavior in independent cultures, and to discover their antecedents.

The Factor Analysis of Behavioral Proportions

Principal Components Solution

The general statistics of this factor analysis and the factor matrix itself are reported in Tables IX and X. In Table IX, it can be seen that five

TABLE IX

Principal Components Factor Analysis of Proportions
General Statistics

Factor Variable	Lambda	% Variance Accounted For	Cumul. Variance Accounted For
1	2.03	16.9	16.9
2	1.89	15.8	32.7
3	1.37	11.4	44.1
4	1.26	10.5	54.6
5	1.12	9.3	64.0
6	.96	8.0	72.0
7	.85	7.1	79.2
8	.72	6.0	85.2
9	.63	5.3	90.5
10	.57	4.8	95.2
11	.49	4.1	99.3
12	.08	.7	100.0

Lambda's have roots greater than 1.0. Nine factors individually account for at least 5% or more of the variance. Four factors account for 10% or more of the variance. These first four factors account for 54.6% of the cumulative variance, whereas the first five factors account for 64.0% of the variance. The unrotated matrix reveals many similarities to the matrices involving behavioral rates (see Table X).

Factor I is bi-polar. At one end of the dimension is interpersonal seeking behavior, while at the other end are categories of deprivation. This factor is essentially identical to Factor II obtained from the unrotated principal

TABLE X

Principal Components Factor Matrix of Proportions

	1	2	3	4	5
Attempts to dominate	.47387	.17201	-.08077	-.51672	.11983
Reprimands	.14157	.45610	-.63535	-.15578	.31323
Suggests responsibly	-.06281	.57000	-.07664	-.49696	-.36595
Gives help	.00367	.54555	.35725	.55422	-.16400
Gives support-approval	-.02280	.57791	.38395	.07170	.35748
Acts sociable	-.60256	-.49144	-.32245	-.11744	-.02493
Contacts physically	-.52256	-.23088	.32594	-.19173	.44625
Succorance	-.63317	-.04211	.14273	-.08424	-.22163
Calls attention to self	.03969	-.01943	-.57877	.52259	-.23036
Assaults sociably	.53710	-.32755	.26002	-.12741	-.36038
Assaults	.35812	-.25344	-.09249	.24167	.53863
Symbolic aggressions	.57030	-.48234	.19933	-.04883	-.04858

components solution with rates. There, it will be remembered, the first factor was a general social participation factor. That Factor II of that analysis should move up to the first factor in this analysis is as it should be. The use of proportion scores removes the general social participation factor.

Factor II is also a bi-polar factor. At one end are the mediational categories: supporting-approving, suggesting responsibly, helping and reprimanding. At the other end are categories loaded on either the seeking factor or the deprivation factor: sociability, symbolic aggression, and social assaults. However, it should be noted that acting dependent (succorance) and attempting to dominate are not negatively loaded on the factor. This factor is similar to, though not identical with, Factor III obtained in the rates study. Whereas that factor did not include all of the mediational categories included here, it tended to have more categories loaded on the negative end of the dimension. This can be understood when one remembers the high correlation between mediational type behaviors and general social participation. Given a principal components solution, common variance among these mediational categories, in so far as it is coterminous with high participation, will be reflected in the more primary factor of social participation. When rate of activity is not a factor, as in the case of proportional measures, the common variance among the mediational categories will be preserved for this factorial dimension. Thus, the factor obtained here is more similar to that obtained in the five factor varimax rotation of the rates data. There, the first factor, social participation, similarly drained off variance common to mediational behaviors; however, the effect was not so marked.

Factor IV reveals some information additional to that obtained in our analyses of rates. Previously, in the unrotated Factor IV, and in the four and five factor rotations of that matrix, was a two category bi-polar factor. At one end was contacting physically, and at the other end, calling attention to self. Factor III, obtained in the principal solution of proportions, adds more categories to this dimension. As such, we begin to get a picture of what this factor might be. Loaded positively with contacting physically, are the categories of helping and support-approval. This suggests an indulgence in others - perhaps an altruism. At the negative end of this factor, loaded along with calling attention to self, are the categories of reprimanding and acting sociably. These categories suggest an emphasis on individual prominence. In all cases the actor is central to the focus of the interaction. Thus, this dimension may be reflecting a narcissism at one end and an altruism at the other. In the first case, it appears that the libidinal investment is in others in the interpersonal world, whereas in the second case, it would appear that it remains within the self. Factors IV and V of the proportion analysis reveal no interpretable patterns. Thus, we shall proceed no further in our interpretations.

In summary, it would appear that the principal components factor solution yields a structure which is similar to both the principal components solution with rates, and the varimax rotation of the first five rate factors, once the first factor of social participation is removed.

Varimax Rotations: Proportions

Taking our cue from the information yielded by inspection of the unrotated structure, we rotated the first two, three and four factors obtained from the principal components solution of proportion scores. A rotation of more than four factors would have resulted in the variance settling into too few categories per factor.

Two Factor Rotation

It was anticipated that the two factor rotation would yield a structure similar to that of the three factor rotation of rates, minus the first social participation factor. That is, it was expected that a mediation, non-mediation dimension would appear, along with a deprivation-seeking dimension. This is, in fact the case. The results of this rotation are presented in Table XI.

Factor I is the deprivation-seeking factor, bi-polar in nature. Highly Highly positively loaded are the categories of symbolic aggressions (.621), sociable assault (.571), and attempts to dominate (.451). Physical assault also is positively loaded on this factor (.384). On the negative end of the factor are the categories of succorance (-.624), acts sociable (-.543), and contacts physically (-.493).

TABLE XI

Varimax Rotation of First Two Factors of Principal Components Factor Solution Proportions

	1	2
Attempts to dominate	.45147	.22431
Reprimands	.08928	.46915
Suggests responsibly	-.12664	.55929
Gives help	-.05782	.54248
Gives support-approval	-.08778	.57166
Acts sociable	-.54335	-.55621
Contacts physically	-.49322	-.28829
Succorance	-.62439	-.11319
Calls attention to self	.04162	-.01484
Assaults socially	.57059	-.26494
Assaults	.38440	-.21147
Symbolic aggressions	.62102	-.41500

Factor II is the mediation, non-mediation factor. Positively loaded on the factor are the categories of support-approval (.572), suggests responsibly (.559), gives help (.542), and reprimands (.469). Attempts to dominate is directionally positive on the factor (.224). Negatively loaded on the factor are the categories of acts sociable (-.556) and symbolic aggressions (-.415). Directionally negative are the categories of assaulting sociably (-.265) assaults physically (-.211), contacts physically (-.288) and succorance (-.265).

The picture is clear. When the effects of differential social participation are removed as a source of variance, two factors appear: a mediation factor, and a deprivation-seeking factor. While these two dimensions are independent of one another, the categories which represent them are not. Seeking and depriving categories also have negative loadings on the mediational dimension. This means that children scoring high on either deprivation or seeking are likely to score low on mediation. Children who receive an intermediate score on the deprivation-seeking factor are more likely to receive a high score on the mediation dimension. Thus, the emergent typology is again one which suggests that children are likely to be typified by either a high score on mediation or not. If not, they are likely to have a high score on either deprivation, or seeking, but not both. This is consistent with our expectations.

The Three Factor Rotation of Proportions

The three factor rotation essentially duplicates that obtained for the rotation of the first two factors. (See Table XII) The third factor is a truncated version of the dimension of egocentrism-altercentrism. Positively loaded are the categories of reprimanding and calling attention to self. The category contacts physically is negatively loaded. This dimension is not sufficiently specified to be either meaningful or useful. However, the inclusion of the third factor does have implications for the specification of the prior two.

TABLE XII

Varimax Rotation of First Three Factors of Principal Components Factor Solution Proportions

	1	2	3
Attempts to dominate	.48000	.11549	-.13009
Reprimands	.18561	.06571	-.77005
Suggests responsibly	-.05096	.44726	-.36342
Gives help	-.01130	.65159	.02383
Gives support-approval	-.03895	.69253	.02839
Acts sociable	-.58787	-.59976	-.05706
Contacts physically	-.54425	-.04041	.36712
Succorance	-.64115	.02440	.10665
Calls attention to self	.07458	-.31445	-.48217
Assaults sociably	.51619	-.13515	.42269
Assaults	.35991	-.25730	.07276
Symbolic aggressions	.55110	-.29833	.45268

Reprimanding is removed from the definition of the mediation factor. Otherwise, the picture is pretty much the same, except that Factors I and II are less sharp in detail.

The Four Factor Rotation of Proportions

The four factor varimax rotation of the proportion scores reveals some differences in the characteristic dimensions specified (See Table XIII). Factor I is again a bi-polar deprivation-seeking factor. However, as expected, the categories having significant loadings on the factor are further reduced. Symbolic aggressions and assaulting sociably have stronger loadings on the factor. But the loading of attempts to dominate drops to .30. The negative pole is made up of two categories, acting dependent and acting sociably.

TABLE XIII

Varimax Rotation of First Four Factors of
Principal Components Factor Solution
Proportions

	1	2	3	4
Attempts to dominate	.30901	-.02639	-.09354	-.65018
Reprimands	-.31067	-.06674	-.56041	-.49089
Suggests responsibly	-.31275	.15186	.07337	-.67485
Gives help	-.17162	.79866	-.09371	.23733
Gives support-approval	-.16521	.64402	.14289	-.15681
Acts sociable	-.35581	-.69610	.20111	.26601
Contacts physically	-.18592	-.16199	.61905	.15921
Succorance	-.43554	-.11338	.45079	.15615
Calls attention to self	-.19528	-.12739	-.66925	.32828
Assaults sociably	.68741	-.02237	.05982	-.05475
Assaults	.36025	-.06202	-.29138	.20227
Symbolic aggressions	.76119	-.12777	-.00306	.06530

Factor II, previously the general mediation factor, now is reduced to a pure nurturance factor, being made up of gives support-approval (.799) and gives help (.644). The negative end of the factor is defined by only one behavior, acts sociable (-.70).

Factor III continues to be an egocentrism-altercentrism factor, being positively defined by calls attention to self (-.669) and reprimanding (-.560). Negatively, it is defined by physical contact (.609) and succorrance (.451).

Factor IV reveals a dimension previously undifferentiated from general mediation. This is a dominance factor, minus the nurturance. It is defined by suggests responsibly (-.675), attempts to dominate (-.650) and reprimands (-.491). This would indicate that beyonds a certain amount of differentiation the general mediation factor separates into two more specific factors: a nurturance dimension and a dominance dimension. They may, indeed, serve as alternative modes of responding to others' needs for mediation. The more altercentric children may respond with nurturance, whereas the more egocentric children may respond with dominance. With greater samples of behavior, this particular distinction would be worthy of further analysis.

By way of summary of the rotation of the proportion structure, it can be said that the two factor rotation yielded the most clear relation to that of the rate analysis. The three and four factor rotations added little to the interpretation, and tended to reduce the sharpness of definition of the first two factors. But they do give indications of where common variance is likely to persist despite increasing differentiations among the behaviors.

Summary of Common Factor Analyses

The common factor analyses of the behavioral rate and proportion data have seemingly yielded an unambiguous structure. First, there is a general factor of social participation: children vary widely in terms of sheer frequency of interaction with others in their world. Within the content of a child's social participation, three clearly defined factors are evident. First, is a dimension of interpersonal mediation -- the extent to which the child attempts to mediate means and outcomes for others. This dimension is somewhat related to over-all level of social participation -- children characterized by frequent mediation attempts, are also likely to be high social participators. This finding is evident from the loadings of the mediation categories on both the over-all social participation factor, and the more specific mediational factor.

The second and third emergent content factors can be thought of as either orthogonal factors, or as opposite ends of a single dimension. In either case, they are orthogonal to the factor of mediation. The proportions as well as the five factor rotation of the rate matrix, yield a single factor having social deprivation at one end, and interpersonal seeking at the other. Thus, children likely to be high social deprivers are unlikely to be high interpersonal seekers. The three and four factor varimax rotations of the rates, however, produced independent (and unipolar) interpersonal depriving and seeking factors. Given a high score on one of these factors, a child might or might not also be characterized by a high score on the other.

We think the most fruitful way to conceptualize them is as two separate, but negatively related, factors of behavior. In interpersonal seeking the child attempts to gain something from other; but the other does not necessarily give up something. He does provide the seeker with something wanted. Thus, here the characterization is that the successful seeker gains something, while the cost to the giver is unknown. In that the giver's behavior is optional (he may or may not choose to comply with the request of the seeker) we would expect that whatever the cost, the rewarding aspects of the situation are greater. Otherwise, he would not choose to do what is not mandatory.

Interpersonal deprivations, in contrast, are interactions in which it is certain that the impact of the action, if successful, will be costly to the other. He will experience a loss of reputation or support. The benefit to be gained by the actor in this case, is as uncertain as the loss to be sustained by the offerer in response to the seeking. That is, we don't know to what extent the depriver will gain by the deprivation of other. However, we do suspect that the anticipated net effect will be a gain rather than a loss; otherwise, the behavior would not make much sense. That physical assaults, presumed to be under the control of the instigation rather than the effect of the act, is not loaded on this factor, seemingly supports the notion that it is the loss to the target, and the net gain to the actor which provokes acts of social deprivation.

We see these two factors, then, as conceptually distinct. One puts the other down in the first case, and builds him up in the second. However, it is easily conceived that these two kinds of behavior would be negatively related across children. Those whome you cause to suffer are unlikely to give you what you seek, unless they are made to do so. Similarly, you are unlikely to make suffer those from whom you gain your sustenance.

We conclude that four factors operative in organizing the structure of children's behavior are cross-culturally apparent: amount of social participation, interpersonal mediation, deprivation, and seeking. Two other dimensions deserve mention. First, it is likely that a dimension of egocentrism vs.

altercentrism may be a universal. Second is the possibility of a factor of impulsivity-premeditation. There is some evidence for the presence of the first dimension, and only slight evidence for interpreting the presence of the second.

Comparison of Variance Accounted for by Independent and Combined Analyses

We have had to resort to combined correlation matrices in order to find meaningful dimensions of behavior across cultures. One question that can be asked, is how much common variance we have sacrificed to do so.* The principal component solutions for the separate cultures extract a certain amount of common variance with N factors, as do the solutions for the six cultures combined. How much less common variance is extracted by recourse to the combined matrix, as opposed to the average variance accounted for in the separately factored matrices?

If it could be demonstrated that the variance accounted for by the over-all analysis is not appreciably less than the variance accounted for by the separate analyses, then it can be concluded that there is little common variance which is idiosyncratic to individual cultures. This is so because in principle, any determinant space to which the over-all factor matrix can be rotated, can also be approximated by the rotation of the matrices of the individual societies (given the removal of the orthogonality criterion). On the other hand, if the common variance yielded from the combined matrix is greatly exceeded by the common variance in the individual societies, then it must be concluded that the over-all matrix is poorly representative of the structures which would emerge in the six separate societies.

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* We are indebted to Professor Richard Darlington for working out the following analysis.

In Tables XIV and XV, we have listed the Lambdas and percentage of variance accounted for by the principal component solutions of the behavioral rates and proportions, for each culture separately and for the 6 cultures combined. The mean variance accounted for by the first four factors in the rates analyses is 71.28. This exceeds that accounted for by the combined analysis by 14.3%. The average variance accounted for by the first three factors across the six societies is 57.89%. This exceeds that accounted for from the combined matrix by 13.74%. Thus, on both accounts the variance of the separate cultures exceeds the yield of the combined matrix by 13 to 15 percent.

TABLE XIV

Table of Lambdas, % of Variance Accounted For, and Cumulative % Accounted For
Rates

Lambda's

	Okin.	Phil.	Ind.	Mex.	N.E.	Afr.	Synthetic Matrix
Factor I	3.83	3.53	2.70	3.40	2.59	3.41	2.64
II	1.88	2.00	2.60	2.46	2.51	3.04	1.61
III	1.75	1.60	2.10	1.68	1.66	1.44	1.46
IV	1.33	1.18	1.12	1.23	1.21	1.06	1.13
							1.09

% Variance Accounted For

	Okin.	Phil.	Ind.	Mex.	N.E.	Afr.	Synthetic Matrix
Factor I	31.88	29.41	22.48	28.31	21.61	28.42	21.96
II	15.67	16.69	21.71	20.48	20.93	25.31	13.45
III	14.61	13.31	17.50	14.00	13.87	11.98	12.15
IV	11.06	9.82	9.33	10.29	10.08	8.84	9.41
Cumul. %	73.22	69.24	71.07	73.08	66.50	74.55	56.98

Our interpretation of this finding is that the over-all matrix loses some amount of common variance, captured in the separate analyses. Thus, the within-culture analyses retain a component which could not be included in further rotation of the over-all structure. On the other hand, the loss in variance is not so great as to put in doubt the authenticity of the over-all matrix as a representative of common dimensions operative across cultures.

TABLE XV

Table of Lambdas, % of Variance Accounted For, and Cumulative % Accounted For Proportions

Lambda's

	Okin.	Phil.	Ind.	Mex.	N.E.	Afr.	Synthetic Matrix
Factor I	3.57	2.79	2.87	2.75	2.72	3.11	2.03
II	2.07	2.56	2.27	2.07	2.13	2.70	1.90
III	1.58	1.65	1.79	1.57	1.72	1.76	1.37
IV	1.13	1.25	1.39	1.51	1.48	1.38	1.26
V	1.12	.97	1.08	1.07	.93	1.06	1.13

% Variance Accounted For

	Okin.	Phil.	Ind.	Mex.	N.E.	Afr.	Synthetic Matrix
Factor I	29.73	23.25	23.88	22.96	22.64	25.94	16.91
II	17.23	21.32	18.88	17.29	17.74	22.55	15.79
III	13.20	13.78	14.89	13.06	14.38	14.65	11.44
IV	9.45	10.41	11.58	12.57	12.37	11.49	10.49
V	9.36	8.08	9.01	8.96	7.77	8.80	9.38
Cum.I-III	60.16	58.35	57.65	53.31	54.76	63.13	44.15
I-IV	69.61	68.76	69.23	65.87	67.13	74.62	54.63
I-V	78.97	76.84	78.25	74.83	74.91	83.42	64.01

We conclude that the over-all analysis of common factor space has yielded dimensions of behavioral structure which transcend culture, and which are meaningful. We also conclude that culture makes a significant contribution to the relations among categories of social behavior.

Further Exploratory Analyses

Common factor analysis has now become a traditional tool in multivariate research. While it has proved useful in providing manageable representations of data, it is clear that problems persist concerning the number of factors needed to represent a given set of data, whether the minimum set of factors is the best explanation for the data, and additional problems grown out of the mathematical indeterminateness with which reference axes are developed (Guttman, 1954).

With regard to the last question, the solution has reverted to alternatives based on psychological rather than mathematical assumptions. Each investigator tends to rotate to a set of reference axes which makes best intuitive or theoretical sense to him. It has now become clear, however, that the number of factors obtained, and the reference axes with which they are provided, bear no necessary relationship to any "true" set of factors, in the sense of having greatest explanatory value within and beyond the domain of the data factor-analyzed. This has been documented with a recent re-analysis of the classical "book problem", where it is demonstrated that the most fundamental physical dimensions of a book are not necessarily those revealed by a factor analysis. (Overall, 1964).

Guttman has explored alternative methods for determining elementary components which account for differential values of variables and the relations obtaining between variables.(Guttman, 1964). In particular, he has devoted his attention to explaining the relations obtained between variables on the basis of an ordering of factors.

He argues that the patterning of correlations between tests of a matrix may reflect a) a difference in the degree of complexity each test of a set involves in the measurement of a single kind of ability (called a simplex) and b) a difference in the kind of ability the various tests are measuring, while at the same level of complexity (called a circumplex) or c) a difference in both kinds of ability and the degree of complexity of each ability measured (called a radex). (Guttman, 1954, 258-348).

Uriel Foa has adapted much of this framework to his treatment of the phenomena of interpersonal behavior. In a series of papers he has developed and applied the concepts of simplex and circumplex to the patterning of relations obtained among categories of interpersonal behavior. He has applied several mathematical principles helpful for interpreting thes relations as well, and has proposed a theory of "facets" for accounting for a circumplex order he has observed both in his own data and the data of others. (Foa, 1958; 1961; 1962; 1963; 1964; 1965; ms).

Other investigators, working from other orientations, have also observed systematic patterns in their correlations data which they have attempted to explain. LaForge, in his work with the Leary grid, uncovered a circular ordering of behavioral relations (Leary, 1957), as have Schaefer and Bayley in their research on the behavior of mothers toward their children (Schaefer, 1959; Bayley and Schaefer, 1960a; 1960b). Borgatta and co-investigators, working in the area of small group research also uncovered some of these ordering properties (in this case a simplex ordering). (Borgatta, Cottrell, and Mann, 1958).

In all of these investigations, two questions have been focussed on:

1) to what extent and what kind of order factors characterize the relations between variables in the domain of interpersonal behavior and 2) what kind of principal components explanation is most useful in accounting for the order factoring obtained

The approach to these problems will be highly speculative in this report. Our mathematical competence in this area is limited, and the complexity of the issue is great; but it is our belief that expertise derived from the direct study of interpersonal behaviors will be useful in attempting to advance in the quest for an adequate explanatory system.

Examination of the Intercorrelation Matrix of Category Rates

We shall begin this search with an examination of the combined correlation matrix of category rates. The matrix constructed is that used in the factor analysis of rates, except for one difference. We have omitted the category of "calls attention to self" since this did not appear to be a significant variable in any of the principal factors extracted from the rate matrix.

We have rearranged the behavioral categories so that they conform to two properties, ascertainable by inspection. (See Table XVI). First, the ordering of the categories is arranged so that the highest correlation between any two variables can be found about the diagonal. As one moves either northeast in the matrix or southwest, the correlations tend to decrease in size, approaching zero, and sometimes a negative value. In addition, the categories which are most highly related to all others tend to be placed in the middle of the matrix. As one goes to either of the two ends of the matrix, the amount of variance the variable shares with the rest of the variables in the matrix decreases.

The first property is one which, upon inspection, tends to differentiate the simplex from the circumplex. With a circumplex ordering, the correlations are highest closest to the diagonals (as with a simplex), decreasing as one goes to the northeast-southwest corners. But, unlike a simplex, the correlations then increase again, at the furthest distance from the diagonals.

Guttman proposes that a simplex ordering indicates a difference in complexity of tests (categories) all measuring the same kind of ability. In order to test rigorously for the presence of a simplex ordering and the kind of simplex attained, it is necessary to apply formal mathematical tests to the matrix. However, we shall satisfy ourselves with this sight-test, as it is our belief that the matrix reflects more than just tests of different complexity of one

TABLE XVI

Intercorrelations Among Eleven Behavioral Rates, Rearranged to Approximate a Quasi-Simplex Ordering

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Acts sociable (1)		.17	.46	-.09	.09	.31	.24	.18	.18	-.02	-.09
Contacts (2)			.16	-.06	.09	-.09	-.04	-.01	-.03	-.09	-.03
Succorance (3)				.13	-.06	.17	.04	.02	.02	-.01	-.10
Gives help (4)					.31	.26	.22	.06	.06	-.12	.03
Gives supp-app (5)						.35	.34	.22	.05	.01	.04
Sugg.respons. (6)							.46	.40	.12	.06	-.22
Reprimands (7)								.37	.18	-.05	.01
Att. to dom. (8)									.25	.33	.01
Symbolic agg. (9)										.41	.12
Assaults soc (10)											.15
Assaults (11)											
Ranking on basis of common variance.	4	10	9	7	5	1	2	3	6	8	11
Ranking on basis of chi-square extracted by Factor I	4	10	8	6	5	1	2	3	7	9	11

ability.

Further observations should be made of this matrix in Table XVI. First, the simplex ordering obviously does not apply to the category of acts sociable. It has been placed above contacts physically, on the top of the matrix, in order to maintain the general sense of ordering obtained. Thus, it must be that acts sociable reflects more than a differential degree of complexity along a single dimension.

It should further be noted that the categories are not equally separated from one another. Contacts physically is somewhat distant from its closest neighbor, succorance (r-.16). Similarly, succorance is fairly distant from its close neighbor, gives help (r=.13). At the other end of the continuum, assaults is quite distant from its closest neighbor, assaults sociably (r=.12). Also, symbolic aggression is somewhat distant from its closest neighbor, attempts to dominate (r=.25). These discontinuities are paralleled in that we obtained three unipolar orthogonal common factors in our earlier three-factor varimax rotation of the principal component factor matrix of these behavioral rates. Thus, the first three categories in Table XVI formed our seeking factor, the next five our mediation factor, and the last four (with attempts to dominate overlapping mediation and deprivation) the deprivation factor. Looking further into the correlation matrix, it can be seen that these three clusters are present here as well. This last observation can be stated in another way. Instead of the correlations continuing to diminish as one gets further away from the diagonal, they tend to settle at zero and stay there.

Let us assume that this matrix (except the category of acts sociable) is probably not a perfect simpliex nor even a quasi-simplex (in any of the formal ways specified by Guttman), but that it does tend toward a simplex ordering. If this is so, then we can ask what the single ability (dimension) is which is being measured at different levels of complexity by these behavioral categories . A lead is provided by returning to the first principal component obtained in the common factor analysis. It will be remembered that the first component obtained was one of general social participation. All categories, except two, were positively loaded on this factor. These were contacts physically (-.008) and assaults (-.091).

By inspecting the last two rows in Table XVI, a comparison can be made between the common variances extracted from the first principal of the factor matrix and from the 11 x 11 "r" matrix dealt with in the present section. In the next-to-last row is a ranking of the categories on the basis of most-to-least common variance. In the last row are listed the ranks of the categories on the basis of the common variance extracted from each category by the first principal component. As can be seen, except for three one-position changes, the ranks are the same. Because all of the categories except two were positively loaded on the factor, the factor had been considered to be a general one. The factor was then labelled social participation because of the single component which all the behavioral categories had in common: they involve the presence of an interpersonal contact. The absence of an interpersonal contact is indicated only by the absence of frequencies in all twelve behavioral categories.

But now a difference in the interpretations of common factor loadings and simplex orderings becomes apparent. In the interpretation of common factors, the categories with the highest loadings share the greatest amount of variance in common with the underlying factor. One typically thinks of these categories with the highest factor loadings as most typifying the factor. In simplex ordering the interpretation is different. If the matrix is found to have simplex ordering, then the tests are thought to have a relation to one another, scaled on the basis of their differential complexity. Tests involving the greatest complexity and the least complexity will be similar in that each will share the least common variance with the remaining tests along the dimension. Conversely, those categories sharing the greatest variance with other categories do so because they are half-way between the most and least complex tests. Thus, the category suggests responsibly has the greatest common variance, not because it is most representative of the dimension of social participation, but rather because it reflects social participation at an intermediate level of complexity. It shares more variance with the sum of the rest of the tests than does any other test of the ability.

The simplex explanation for the relations among tests suggests that the nature of the dimension is somewhat different than we had originally assumed. It had initially been thought to reflect the factor of differential participation because the categories most highly loaded on it were the categories having the highest frequency of occurrence. But now these high-frequency categories can be thought of as involving only an intermediate level of complexity on the dimension.

What is the content of a dimension which has as its highest level of complexity physical contact, and at its lowest level of complexity assaulting physically? It is now thought that the ordering reflects a dimension of commitment to interpersonal mediation of ones own outcomes. In order to clarify this, a short detour must be made. What is meant by interpersonal mediation of outcomes must be further explicated.

Recent theorists in the fields of social psychology and sociology have addressed themselves to the development of a reward-cost theory of interpersonal interaction (Thibaut and Kelley, 1959; Homans, 1961). It is assumed that interpersonal interactions persist when both participants in the relation profit by the interaction - the rewards obtained by interacting exceed the costs involved (where the costs include the rewards forgone by not interacting, and the rewards include the costs involved in not interacting) (Homans, 1961, 61-64). Interaction is sustained between a person and others because 1) the person obtains outcomes superior to those obtainable through alternative means, and 2) these others obtain outcomes in interaction with this person which are superior to the outcomes obtainable to them by not doing so.

To the extent that a person is dependent on outcomes which are mediated by others, he is regarded as having committed himself to interpersonal mediation of his own outcomes. Thus, for contacts physically to be completed successfully, it is necessary that the target person offer himself to the actor in a most inclusive sort of way. In order for a succorance type of behavior to be instrumentally successful, it is necessary that the target person lend assistance to the actor either in help, support, approval, or direction.

If each person is to profit by the interaction, then both must contribute something to the relation. This is most directly performed by acts which attempt to mediate outcomes for the other. The principle of exchange is that each person, in order to get something from a relation, must also give something to the relation. Children who are characterized only by seeking-type behaviors are children who are highly committed to interpersonal mediation, but who are not regarded as providing equal exchange. Because they are not, they are unable to sustain as high a rate of social participation as are children who seek mediation, but also mediate for others.

It is predicted, then, that children who are mediators for others will also be the targets for mediations. Children who help others can also expect help from others. Children who support others can also expect support from others. Children who responsibly give others directions can expect to receive compensation from the groups to which they belong.

Because of the principle of exchange, then, it is implied that children who mediate for others will also be children who can expect mediation from others. The degree to which the target person obviously gains by the mediation is one parameter indicating the measure of return that can be anticipated. The cost involved for the actor in enacting the mediation is a second parameter in determining the amount of due return.

Giving help to another requires that a person actually participate in the doing of a behavior. As this takes effort and time, the actor might expect high return from such actions. (This may be one reason why succorance and nurturance have been frequently found to be positively related -- children seeking help frequently being children who also give help frequently. If one incurs great expense in the aiding of another, one can, without losing peer status, also request similar assistance from the other.)

Gives support-approval and suggests responsibly are pretty much indistinguishable from one another on the basis of cost to actor. However, the target person may appreciate support-approval to a somewhat greater extent than a responsible suggestion - where the suggestion indicates that one ought to do something, especially when one may not want to do it. For this reason, the target person may, on the average, offer more in exchange for personal support than for direction. Thus, support-approval should precede suggesting responsibly on this dimension of commitment to interpersonal mediations.

Reprimanding also involves specification of direction - but after the fact, and in a manner not calculated to produce a desire in the target person to subsequently mediate in the actor's behalf. With attempts to dominate, the commitment to interpersonal mediations is significantly less. What the child requires from the target person is that the latter comply with his wishes. Reciprocity is not anticipated. Yet, the other child must mediate his own compliance for the dominance attempt to be successful.

This new component becomes more evident in the categories of symbolic aggressions and assaults sociably. (They have been ordered in relation to one another and their neighbors only on the basis of their empirical fit. At this point we cannot theoretically distinguish between them). By the win-lose nature of the action, all that is necessary for the action to be successful is that the other person be present to receive and be negatively affected by the behavior. Again, no interpersonal mediation beyond the present encounter is necessarily anticipated. However, it may be that the dominant aspect of such actions carry with them the implication that the target person can be expected to perform services for the actor in the future "or else". The presence of another is required but, if the act is successful, the outcome to be gained will be at the expense of this other.

In the category of assaults, we have perhaps reached the active avoidance of any kind of interpersonal commitment. One intention behind the physical assault is frequently "keep away from me or else". If the assault is instrumental the intent may be, "I want something and you're in my way". If the assault is consumatory, the motive may be "you've been causing me nothing but pain and trouble; now you're going to pay for it". In all cases, there is little evidence of an anticipation of the interpersonal mediation of outcomes. And while interpersonally mediated outcomes may be forthcoming as a consequence of the assault, these mediations will not be intrinsically pleasing to the target person who will mediate them. Rather, his desire will be to remove himself from the situation as quickly as possible.

In clarifying the level of complexity along this dimension of commitment to interpersonal mediations, it can be noted that we have employed additional distinctions. In ordering categories along the dimension, we have distinguished: 1) to what extent the behavior the actor is performing will effect the outcomes of the target, and 2) what impact the completion of the interaction is going to have on the relation of actor to target. The assertion of the presence of these two components raises the question as to whether there is a single dimension operative. Our answer to this is both yes and no.

In so far as a quasi-simplex can be demonstrated, we believe that it can and should be treated as an elementary component of the data. It can have explanatory and predictive efficacy in itself. It is useful in ordering the within-domain relations and it should have external validity as well. However, in so far as the simplex structure can itself be altered by the manipulation of antecedent components, it, too, must be thought of as a synthetic component. The "elementary component" has its own principle components.

When one thinks of this component as one of social participation (acts having the highest factor loadings also having the greatest frequency of occurrence) it is clear that its theoretical value is limited. Frequency of social participation is the consequence of prior antecedents. It is here asserted that these two components are the actor's ability to immediately effect the target person's outcomes, and the nature of the interpersonal relation existing between actor and target. The assertion of these two components gives rise to four hypotheses. 1) If an actor has the ability to effect the outcomes experienced by the target person and the interpersonal relation is positive, he will facilitate the attainment of the target person's outcomes. He will give to the target. 2) If the actor has the ability to effect the outcomes experienced by the other, and the interpersonal relation is negative, he will prevent the other's gain and/or increase the other's losses. He will deprive the other. If the actor does not have the ability to effect the target person's immediate outcome, but the target person has the ability to effect the actor's immediate outcomes, then whether or not the actor will depend on the target for this outcome realization will be a function of the actor's relation to the target person. 3) If the relation is positive, he will seek these mediations from the target person. 4) If, however, the relation is negative, he will attempt to avoid seeking mediations from this source.

Thus, the two principal components in combination yield a four-fold typology. But before detailing the implications of this typology, it must be asked what the determinants of the second proposed component are. That is, is the existing interpersonal relation positive or negative?

The answer is partially supplied by our earlier discussion of exchange. It was suggested that whether the actor experiences the relation as positive or negative depends partly on the outcomes he receives at the hands of the target person. To the extent that the actor is rewarded by the other in his interactions with other, he will experience the relation as positive, and to the extent that the actor experiences negatively valued outcomes (costs) at the hands of the other, the actor will experience the relation as negative. In terms of our interactional language, the greater the frequency of mediations the actor has received from the target, the greater the positive component in the relation; the greater the frequency of deprivations the actor has experienced at the hands of the target, the larger the negative component in the actor's relation to target. The over-all direction of the relation will be a function of the proportionate relation of suze of positive component to size of negative component: to the extent that the positive component exceeds the negative, the relation will be positive; to the extent that the negative component exceeds the positive, the relation will be negative; to the extent that the relation is marked by equal positive and negative components, the actor will experience ambivalence toward the target.

But the relation of actor to target is not determined solely by their direct exchange with one another. Other persons and events also determine outcomes experienced by the actor in the relation. Two children, both participating in "naughtiness" can be simultaneously punished by their mother; after carrying out a chore together they can be simultaneously rewarded by their mother. A passing animal can cause them to simultaneously experience joy; being caught together in a rain storm can cause them to simultaneously experience discomfort.

It is here asserted that the over-all coincidence and directional association of outcomes is a second variable determining the actor's interpersonal relation to the target. If an actor sees himself and a target as experiencing a common fater - that is, when his outcomes are positive so are the target person's,- and when his outcomes are negative, so are the target person's - then he will experience a positive interpersonal relation to target. When he likes himself he will like his target; when he hates himself, he will hate his target. When he provides for himself he provides for the target; when he deprives target he deprives himself.

If an actor sees himself and his target as experiencing opposite fates -- target gains when he loses, target loses when he gains -- then the actor will experience the interpersonal relation as negative. He provides for himself by depriving his target; he is deprived when his target is provided for. He likes himself and he hates his target; and less ofte perhaps he likes his target and hates himself, giving rise perhaps to status envy (Whiting, J.W.M., 1960).

To the extent that the target has the power to directly effect actor's outcomes, the target can be the primary determiner of the valence of the relation. Presumably, targets will act in the direction of positive association of outcomes, at least to the extent that their own outcomes can be directly effected by actor. As such, the exchange relation obtaining between actor and target will be a primary determinant of the valence of the relation experienced by the actor. But to the extent that the actor's outcomes in the relation are determined by forces other than those at the disposal of the target person, the valence in the relation may be determined by other than direct exchange. With children, this second source of determination is likely to be large.

With this component of interpersonal relation now detailed, we can return to the explication of the implications of our typology. First, let the implication of this typology for amount of social participation be specified.

1) A child's social participation will be highest when he can effect others' outcomes, and his relation to them is positive. In this case, the relation is positive primarily because these others mediate outcomes for him as well.

2) When a child's relation to others is positive because they provide him with positive outcomes but he is unable to provide them with positive outcomes to the same extent, his social participation will be less.

3) When a child can effect others' outcomes but his relation to them is negative, his social participation will be still less. The negative relation produces an impetus for negative association of outcomes, and thus the avoidance of others.

4) When a child's relation to others is predominantly negative, and he is unable to effect their outcomes as well, his social participation will be least. He will avoid others because of the cost involved in interaction, and they will not seek him out because there is nothing to be gained by it. These predictions are diagrammed below.

TABLE XVII

Predicted Level of Social Participation as a Function of Experienced Relation to Other and Ability to Effect Other's Outcomes.

	Child's experienced relation to others is	
	positive	negative
Child is able to effect outcomes	Social participation is very high. (1)	Social participation is low. (3)
Child is not able to effect outcomes	Social participation is moderate. (2)	No social participation. (4)

We are now in a position to clarify two seeming difficulties with our theoretical explanation. If two components are responsible for producing the relations among interpersonal behavior, then why 1) has a quasi-simplex ordering been obtained from the correlation matrix, and why 2) were three unipolar orthogonal factors obtained in the varimax rotation of the first three factors yielded by the principal component factor analysis of the intercorrelation matrix of rates?

Perhaps the answers are evident from the above discussion of social participation. There, we predicted that different combinations of two components would give rise to differential amounts of social participation. In particular, the combination of the two components of 1) not being able to effect others' outcomes and 2) experiencing a negative relation with others, was predicted to lead to the absence of interaction. Yet the "r" matrix is based upon the intercorrelations of frequencies (rates) of enactments of different kinds of interpersonal behavior. In terms of counting the frequency of interpersonal behaviors, the prediction is that this condition will result in there being little to count. To the extent that the child is unable to effect others outcomes and the child is experiencing negative interpersonal relations as well, the proportionately larger amount of the child's time will be spent in non-interpersonal endeavors. There is no category of "time spent not in interpersonal interaction" included in the present analysis. What is the implication of this for the emergence of the quasi-simplex?

Foa attributed to missing categories of behavior the emergence of a simplex rather than a circumplex ordering in Borgatta's data (Foa, 1961, 343-344). It was in the space between dependence and individual prominence that the categories were missing. This space is similar to the one existing between the seeking and depriving behaviors reported here. Going one step further than Foa, we would say that the reason why these interpersonal behavioral categories are absent is that they do not exist. Only the absence of interaction is the pure reflection of this quadrant. This is not to say that interpersonal behavioral categories which will tend to fill this space cannot be constructed. Almost no one is totally lacking in ability to effect the outcomes of some others in some way. And almost no one attaches a totally negative valence to all interpersonal interaction. Interpersonal categories that we think tend to reflect this are characterized primarily by their responses rather than instigational nature. And further, the response will be rejecting, rather than accepting. What is meant by this, is that the child would not be initiating interpersonal acts. He would only respond to the initiations of others. Moreover, these initiations would be responded to by the child with non-compliance and rejection.* In this analysis we have been only concerned with the instigational components of interpersonal acts -- the impetus they introduce into the interaction. As the coding of responsive components was partially compounded with instigational components, such categorizations have been omitted from consideration.

If a category of failure to realize opportunities for interpersonal interactions had been coded in the present study, the prediction is that a circumplex ordering of the correlation matrix would have appeared. This can be partially demonstrated by a rearrangement of the correlation matrix which previously suggested a simplex. This has been done in Table XVIII. (Because acts sociable fits neither pattern, it has been omitted from the table.) The deprivation and seeking categories have been placed toward the center of the matrix rather than at the ends. The result is that the highest correlations are now found in two areas in the matrix rather than in one (as in the simplex). Not only are the correlations highest along the diagonal, they are also high in the upper right and lower left corners of the matrix. Guttman suggests that such an inspectional picture tends to characterize the circumplex (guttman, 1954). By putting seeking categories in the middle of the matrix we have been able to place categories involving similar components at the two ends of the matrix. Delegated to the middle, and in adjacent positions, are the two categories of assaults and contacts physically. These were previously at the

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*In other research by this investigator the problem of categorizing the instigational and responsive components of an interpersonal act has been noted and dealt with. (Longabaugh, 1963; 1966).

TABLE XVIII

Rearrangement of 11 x 11 Behavioral Rate Intercorrelation Matrix, Approximating a Circumplex Ordering

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sugg. respons.	(1)	.35	.26	.17	-.09	-.22	.06	.12	.40	.46
Gives supp-app	(2)		.31	-.06	.09	.04	.01	.05	.22	.34
Gives help	(3)			.13	-.06	.03	-.12	.06	.06	.22
Succorance	(4)				.16	-.10	-.01	.02	.02	.04
Contacts	(5)					-.03	.15	.12	.01	.01
Assaults	(6)						.15	.12	.01	.01
Assaults soc.	(7)							.41	.33	-.05
Symbolic agg.	(8)								.25	.18
Att. to dom.	(9)									.37
Reprimands	(10)									

ends of the simplex ordering, and are the two behaviors thought to have almost opposite values on both components.

The manipulation, and the consistencies and inconsistencies in the underlying ordering become clearer in Table XIX. Here the matrix has been rearranged so that the columns of the matrix now represent rank positional distance from the category indicated on the row. The circumplex ordering predicts that to the degree two categories share the same values on the same underlying components they will be empirically correlated with one another (Foa's principle of neighboring). To the extent that they fail to share the same components they will be unrelated to one another. To this should be added the deduction that, to the extent that the categories reflect opposite values on the same

TABLE XIX

Reordering of Matrix Columns to Correspond to Rank Positional Distance of Column Behavioral Category to Row Behavioral Category

	Ordinally Ranked Positional Distance									Ranking in Terms of Common Variance
Row Category	4	3	2	1	1	2	3	4	5	
Sugg. respons.	.06	.12	.40	.46	.35	.26	.17	-.09	-.22	1
Gives supp-app	.05	.22	.34	.35	.31	-.06	.09	.04	.01	4
Gives help	.06	.22	.26	.31	.13	-.06	.03	-.12	.06	5
Succorance	.04	.17	-.06	.13	.16	-.10	-.01	.02	.02	7
Contacts	-.09	.09	-.06	.16	-.03	-.09	-.03	-.01	-.04	9
Assaults	.04	.03	-.10	-.03	.15	.12	.01	.01	-.22	10
Assaults soc.	-.12	-.01	-.09	.15	.41	.33	-.05	.06	.01	8
Symbolic agg.	.02	-.03	.12	.41	.25	.18	.12	.05	.06	6
Att. to dom.	-.01	.01	.33	.25	.37	.40	.22	.06	.02	3
Reprimands	.01	-.05	.18	.37	.46	.34	.22	.04	-.04	2

component, they will be negatively related to one another.

This adjusted matrix indicates that as the positional distance between two categories increases (thus reflecting across most of the matrix a predicted increasing distance in terms of our two principal components) the correlation tends to decrease as well. This is so irrespective of which direction is taken. This observation conforms to the requirements of the circumplex.

We have made an additional modification in this matrix. We have rearranged the list of categories so that suggests responsibly and reprimands are at the two ends. These two categories were previously observed to share the greatest amoung of common variance with the other categories in the matrix. Given these principles for arranging the matrix, as the categories move toward the center of the matrix on the column axis, there is a decrease in the rank of the category in terms of the variance it has in common with the other categories.

Looking at each column by itself this over-all variance tendency has a parallel. As one moves up or down a given column toward the middle, the degree of positive correlation of the act with the positional equivalent tends to decrease somewhat. This suggests that as one moves towards the middle of the rows, the distance of the category to its adjacents seems to increase. Contacts physically and assaults are less positively related to their neighbors than are any other categories. As indicated above, this is expected to occur on the side where they are placed adjacent to one another. The correlation here is -.03. But each of these behaviors also has a most modest correlation to its neighbor on the other side, as well. This again indicates greater distance.

Similarly, succorance tends to share lesser relations with its neighbor than does gives helpd; gives help shares less than gives support-approval, and gives support-approval less than suggests responsibly. Going down from the from the middle, the same tendency is present, though not as consistently. If these relations were plotted in a two-dimensional space, the full circumplex would not appear. There is a large gap between contacts physically and assaults. The shape would appear closer to a hyperbole than a circle. One conclusion to be drawn is that, in so far as the circumplex does appear, it tends to confirm the two-component theory of interpersonal behavior.

But does this mean that a simplex is not operative as well? We think not. It is our suspicion that the single dimension of complexity of social participation is operative as well. But perhaps not in the more ordinary sense.

By filling in categories of time spent in non-interaction, it is thought the circumplex could be completed. This would rob assaults physically and contacts physically of their unique places at the end of the simplex continuum. It would then be the case that the principle of neighboring would account for all of the relations around the circle. However, the distribution of common variance among the interpersonal categories would remain. That is, contacting physically and assaulting would still share proportionately less variance with other interpersonal categories than would these remaining categories share with each other. It is thought that this could be eradicated by placing categories more similar to these two into the behavioral code. The present conjecture is that the distance between a category and the next is not simply an additive function of their values on the two principal components underlying the proposed circumplex. Instead, the distance between categories, as reflected by the decrease in the size of their correlation, should decrease as one reaches the apex of the horseshoe

The apex will represent the middle level of complexity of social participation. As one moves away from this middle point in either direction, the total communality which the category will share with all other interpersonal behaviors will decrease. This middle point of complexity, it will be remembered, is reflected in the mediational categories of suggests responsibly and gives support-approval. In terms of the earlier typology of principal components, mediational behaviors indicated that the child gave, and himself gained in his interpersonal participations. He could be characterized by high social exchange. Higher levels of complexity in the nature of the child's social participation were characterized by his dependence-seeking. But others were unlikely to gain as much in their interactions with him. Lower on the scale of complexity, the characteristic behaviors were those of depriving. Here again, the participants were thought less likely to benefit jointly by the interaction.

From the point of view of exchange theory, the middle level of complexity in the child's social participation is also the point where maximum likelihood of mutual satisfaction with the interaction will occur! At a higher level of complexity asymmetric dependency will arise. This will not be a point where maximum satisfactions for both participants will occur. At a lower level of complexity asymmetric power will develop, and this also is not likely to be a point where maximum satisfactions for both of the participants will take place. Deprivation (aggression) and seeking (dependence) tend to produce avoidance of social participation by those with the child would otherwise relate. Mediation, on the other hand, tends to produce counter-mediation, and further social participation through social exchange.

What is being suggested here is that a third dimension of interpersonal behavior arises out of the interaction of the two underlying independent dimensions. Children may have experienced predominantly positive or negative association of outcomes in relation to others; they may be powerful or not in their ability to mediate outcomes for others. Each of the four possibilities can occur: high mediation, negative outcome association; high mediation, positive outcome association; low mediation, positive outcome association, and low mediation, negative outcome association. When the emergent typology is one of high mediation of behaviors, and positive association of outcomes, this results in kinds of behaviors which create the conditions for frequent social exchange. Enacting these kinds of behaviors results in high social participation. In two of the other three typologies, only one of the two conditions is necessary for producing high exchange, and thus, the kinds of behaviors produced are not particularly conducive to exchange. In these two cases social participation is only moderate. In the third case, neither condition is present, and the consequence is infrequent social participation.

Three dimensions of interpersonal behavior are thus posited: interpersonal power, interpersonal predisposition based on past association of outcomes, and level of social participation which arises out of the relations of these two elementary dimensions. The quasi-simplex emerging tends to reflect the dimension of interpersonal affect most closely; but the inclusion of non-interpersonal behaviors would turn the simplex into a circumplex.

Three orthogonal factors arose in the common factoring of behavioral rates. It is now asserted that this structure emerged because the relations among categories are a consequence of the two underlying and one interactive interpersonal dimensions. In Table XX these categories are classified according to their supposed value on these three dimensions. Categories reflecting behavioral mediations have positive values on all three dimensions: positive association of outcomes, high interpersonal power, and high exchange participation. Thus, these categories cluster most closely together to produce the mediational factor.

TABLE XX

Classification of Values of Behavioral Categories on Three Variables

Common Factors Loaded On (3-factor Varimax)	Category	Underlying Variables		
		Mediational Power	Interpersonal Predisposition	Exchange Participation
Seeking	Contacts	-	+	+
Seeking	Succorance	-	+	+
Seeking	Acts Sociable	0[+]	+	+
Mediation	Gives help	+	+	++[*]
Mediation	Gives supp-app	+	+	++[*]
Mediation	Suggests respons.	+	+	++[*]
Mediation	Reprimands	+	-	+
Med-Depriv.	Att. to Dominate	+	-	+
Deprivation	Symbolic agg.	+	-	+
Deprivation	Assaults soc.	+	-	+
(Deprivation)	Assaults	+	-	0

[*] Consistent with our conceptualization, when the behavior expressed involves a plus on both mediational power and interpersonal disposition, an interaction effect between the two variables is predicted, producing an expected exchange potential greater than that expected from a summation of the two independent variables.

[+] Acts sociable is classified as neither positive or negative on mediation power; it seems to be the first step into most interactional encounters. This step may then be followed by either a mediation or not. Thus, a child may use sociability as an entree to any interactional intent.

Categories reflecting seeking have three values in common: positive association of outcomes, low interpersonal power, and intermediate social participation.

Thus, they tend to be mildly positively correlated with categories reflecting mediation because they share one value in common (positive association of outcomes). They are at oppositive ends of a second component -- interpersonal power, and seeking is half-way to mediation on the third -- exchange participations.

Depriving behaviors tend to cluster together because they share common values on the three components -- high interpersonal power, negative association of outcomes, and intermediate exchange participation. Depriving is mildly positively correlated with mediation for the same reason as is seeking: depriving shares one value in common with mediation (high power). Depriving and mediation are at opposite ends of a second, association of outcomes, and depriving is half-way to mediation on the third -- exchange participation. Depriving and seeking are slightly negatively related to one another because they are at opposite ends on two components - power and interpersonal affect - but share an identical position on the third -- exchange participation. They share this value on the third because they are on the opposite ends of the scale of social complexity -- extreme depriving is not high enough for high exchange and extreme seeking is too high.

Because of these differential relations among the categories, three orthogonal factors emerge. This interpretation is consistent with the structure obtained when the behavioral proportions were factor analyzed and rotated. There, it will be remembered, the rotation of the first two principal component factors yielded two bi-polar factors -- mediation - non-mediation, and seeking - depriving. The reason why the three unipolar factors now appear as two bi-polar factors is because the third underlying variable, exchange participation, has been extracted from the variance in the behaviors. The seeking and depriving categories which formerly shared this component in common -- tending to produce zero correlations between their behavioral rates -- now have no component in common. However, they still have opposite values on the remaining two underlying components. This being the case, they are now negatively related to one another. The result is that they reveal opposite loadings on the single factor of interpersonal affiliation.

Mediation remains orthogonal to the deprivation-seeking factor because it maintains a value in common and a value in conflict with both deprivation and seeking. Mediation and seeking both involve a positive disposition toward others. Mediation, however, involves power to control behaviors and outcomes of others, whereas seeking indicates the ability to control behaviors and outcomes for oneself. Mediation and deprivation continue to share the component of power to affect the behaviors and outcomes of others; they have values in opposition to one another in terms of the wished outcome.

The loadings of the category proportions on the varimax rotation of the first two common factors are produced in Figure 1. In order to make this picture totally consistent with our interpretation, it is necessary to rotate the reference axis approximately 40 degrees counter-clockwise. (This is done in Figure 2.) The result is that all of the depriving as well as mediating categories have positive loadings on the formerly vertical axis. This axis is now best interpreted as a dimension of interpersonal power. Reprimanding and attempting to dominate are now most highly loaded on this axis. This tends to indicate power assertions which omit any strong component of interpersonal disposition. Mediational categories are still positive, but now reflect not

Figure 1

Two Dimensional Plot of Two Factor Varimax Rotation of The Behavioral Proportions

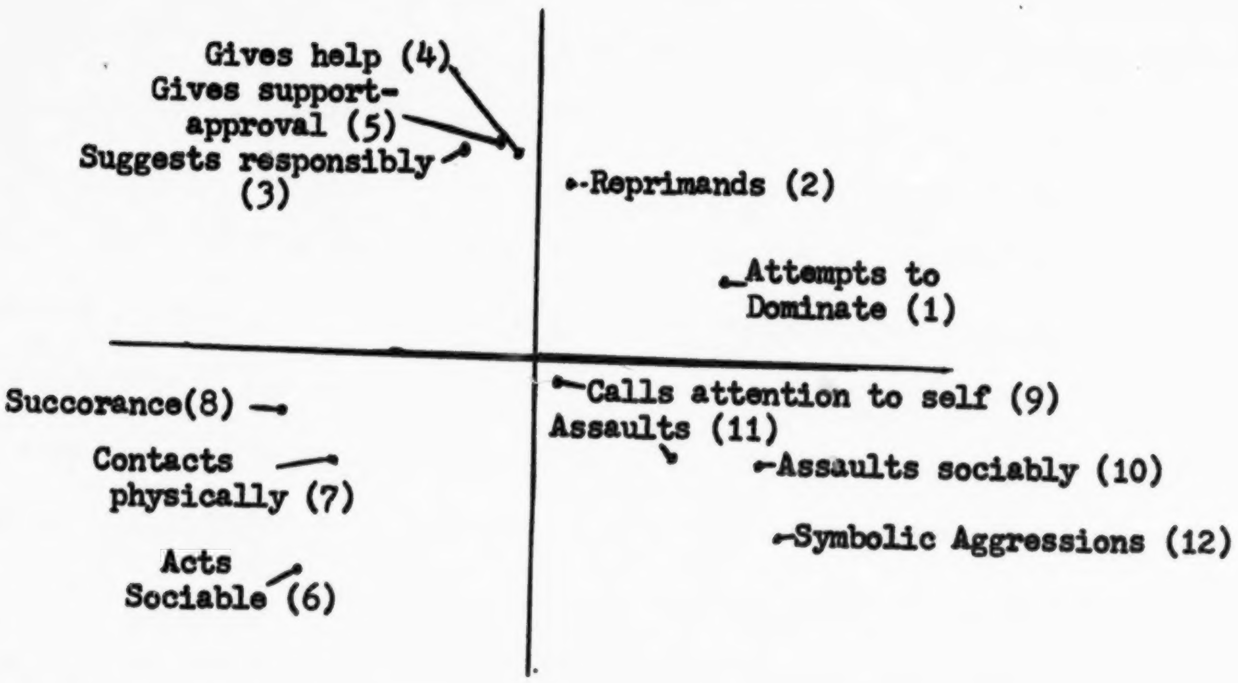
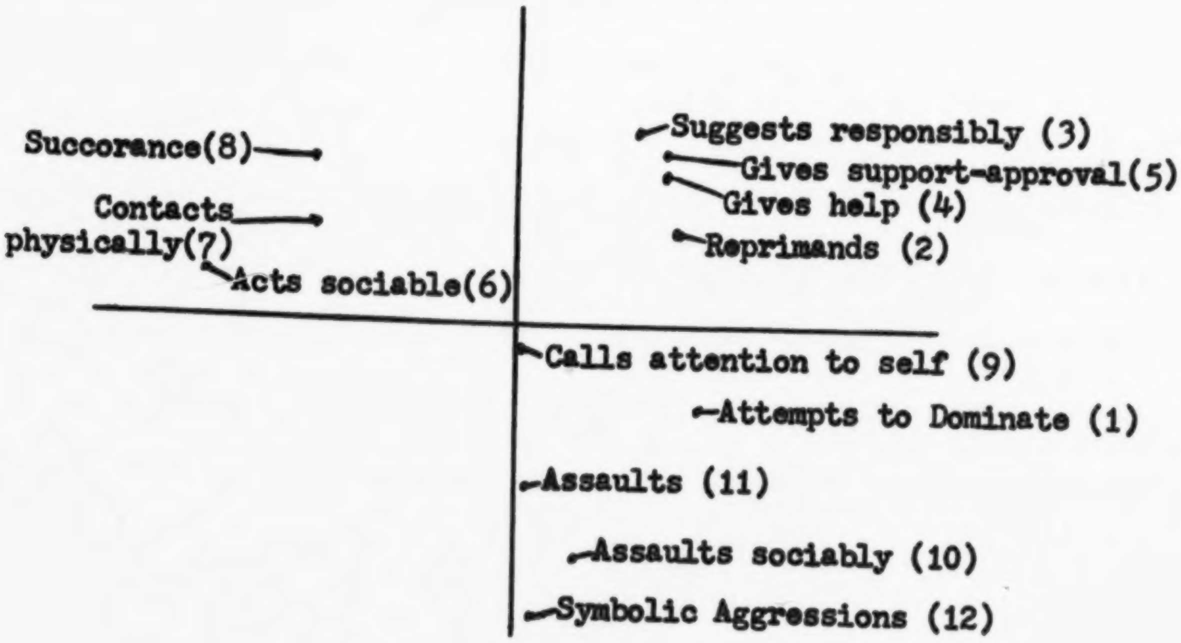


Figure 2

Two Dimensional Plot of Two Factor Varimax Rotation of the Behavioral Proportions With a 40 Degree Counter-Clockwise Rotation of the Axes



only the high power involved but also the positive interpersonal disposition. The depriving categories are altered so that they not only reflect negative predisposition as they did before, but also they reflect higher social power. The seeking categories maintain their low value on power and also tend to maintain their positive interpersonal predisposition.

The emergent behavioral space is similar to that suggested by Leary and associates in their work on the interpersonal diagnosis of personality (Leary,1957). Leary posits a circular grid of relations among interpersonal behaviors (a circumplex ordering in Guttman-Foa terms). He asserts that the circular ordering among behaviors is produced by the interaction of two underlying dimensions - a power or dominance-submission dimension and a dimension of interpersonal affiliation or love-hate. These two axes are virtually identical to two of the components that have been proposed as a result of this analysis.

Leary's work again approximates our own, in that he places his categories in this grid on the basis of their values on the two underlying dimensions. Helping, approving, and suggesting responsibly all fit in his upper right quadrant, as they do in the one reported here. Reprimanding and attempting to dominate tend to fall along his vertical dimension of power, as they do here. The aggressive categories tend to fall primarily on his horizontal axis at the "hate" pole, but also somewhat above it, indicating some power. This is also their position here. The seeking categories on the Leary grid, particularly acting sociable and physically contacting, would fall closer to the horizontal dimension of "love" than they do in this analysis. They would also indicate less low power than they apparently do here. The succorance category, however, is similarly placed.

Theoretical concensus is not enough. Do Leary and associates obtain the ordering they postulate? They do, but most interestingly, only under one condition. This condition is that they use proportion scores rather than frequency scores. Leary and associates employ a self-descriptive measure for this analysis. The interpersonal checklist is a list of behavioral adjectives which people use to describe themselves and others along these theoretical dimensions. Leary and associates collected a large number of these descriptions from psychiatric and other populations in the United States (Leary, 1957; Freedman, Leary, Ossorio, and Coffey, 1951). The adjectives checked were combined into scores representing the theoretical variables at the level of octants (Leary, 1957; 455-463). These octant scores were then correlated with one another across the subject population. When scores based on the weighted frequencies of checked behaviors were intercorrelated, an expected ordering was found. Behaviors placed closest to one another were theoretically also behaviors placed closest empirically. However, one problem emerged. Scores computed on the basis of these weighted frequencies alone were rarely negatively correlated with one another. That is, while the size of the correlation between any two categories decreased with their predicted distance, the correlation rarely became negative. This last fact is counter to their prediction. Given the nature of the grid, categories on opposite sides should have been strongly negatively correlated with one another.

This finding, of course, is the duplicate of the one obtained here, in the intercorrelation of behavior rates. What did Leary and associates do? They converted their scores into proportions of total adjectives checked. This procedure is identical in form to what we have done with our behavior rate scores. We converted them to percentage of total social behaviors which are in a particular category. When their correlations were then redone, Leary and associates found the pattern they anticipated - one which included sizable negative correlations between categories at opposite ends of their grid. The interpretation offered by these researchers for the lack of negative correlations in their rate scores was the differential tendencies of persons filling out the check lists to answer "yes" to the question as to whether they themselves did or did not have the trait.

It is here agreed that this differential tendency produced the predominance of positive correlations. What we would add to this observation is the thought that this differential tendency is not merely differential "yea-nay" set. Rather, the hypothesis is that people responding with more "yes" responses do so because they see themselves as enacting these various behaviors in their interpersonal relations. They may also be seen by others as having more of these characteristics than the lesser responders. Further, observers trained to systematically observe their interaction might also provide data to indicate that they indeed relate in more diverse ways. This diversity perceived, and in fact, may be the result of the high responders' social participation more often in interaction. Because they interact more, they do more of most kinds of behaviors than people who participate less often. This last prediction is the one found to hold in the present data. Children who were frequent social participators tended to enact more of almost any kind of interpersonal action than did children who were infrequent participators. This gave rise to the three unipolar factor, orthogonal structure in this data. When we converted to proportions, this data also reflected the two bi-polar orthogonal structure.

It is submitted, then, that the difference between the results obtained by Leary and that obtained in the present data is one that is produced mainly by the type of behavioral indices used as variables.

Perspectives and Implications

In this report it has been proposed that three factors produce a child's amount and kind of interpersonal behavior: 1) his ability to mediate outcomes for others, 2) his predisposition towards others, and 3) the consequences for social exchange which arise out of the interaction of these two principal factors. The second factor, the child's interpersonal predisposition toward others, has been proposed to be a function of the association of outcomes the child experiences in relation to others. This associated outcome is itself a function of two variables, 1) the extent to which the other person in the relationship mediates outcomes valued by the child, and 2) the extent to which factors outside of the dyadic relation produce a common association of outcomes between the child and others.

It has been argued that the proposed factors account for 1) the correlations obtained between rates of different kinds of behaviors, 2) the factors arising out of the common factor analysis, and 3) the possible order-factors existing in the correlation matrix of these rates. It has been further proposed that the differences emerging between the analysis of behavioral rates and behavioral proportions have arisen out of the removal of the effects of one of the three underlying factors: that of exchange potentiality. The hypothesis has been offered that the circularity arising in the Leary grid is also due to this third factor being partialled out of the matrix.

It has been noted that two of the explanatory concepts proposed here are similar to those proposed by Leary and associates. But the explanation offered here differs in several respects. First, a third factor is proposed as being central to the adequate prediction of the relations between behavior category rates. Second, a person's predisposition towards others is itself considered in terms of the conditions which give rise to these differential predispositions. Third, the emergent structure of interpersonal behaviors is viewed from the perspective of a dyadic model rather than one that is monadic. It is proposed that the efficacy of the hypothesized underlying factors lies in their implications for social exchange.

This model implies a specifiable relation between behavioral structure and process. If the structure of a person's behavior is indeed a function of these variables, then a particular person's behavioral profile can be altered by modifying social conditions under which he interpersonally participates. In particular, by modifying the association of outcomes the person experiences in relations with others, it is hypothesized that we can alter his predispositions, and thus behaviors, toward these others. By reducing or increasing the value others attach to the outcomes a person can mediate for them, it should be possible to alter his behavior along the power axis. Conversely, by pairing people with particular behavior profiles, it should be possible to predict the amounts and kinds of behaviors which will occur within the pairings. Thus, process produces structure, and structure influences subsequent process. In Leary's model, structure is used to predict interpersonal behavior, but interpersonal process in itself is not able to produce altered structure.

Schutz has proposed a three-factor theory of interpersonal needs (Schutz, 1958). These needs are affection, control and inclusion. His affection and control needs are similar to Leary's in that people attempt to attain a particular, most comfortable, point along each of these two dimensions in their interpersonal relations. People with compatible needs will be more comfortable in their interactions with each other. However, Schutz' affection dimension differs from Leary's in that it extends from close interpersonal relations to those which are distant. The distant end is not systematically related to Leary's "hate" pole.

Schutz's third need, inclusion, is defined behaviorally as the need to establish and maintain a satisfactory relation with people with respect to interaction and association. People vary in terms of how much they interact with others. This dimension, of course, is similar to the third factor postulated in the present work. Schutz finds inclusion and affection to be empirically correlated for his subjects. We would expect to find inclusion correlated with both affection and (high) control. However, in situations where personal expression and friendship are particularly valued, it would be expected that social participation level would be most closely related to positive interpersonal predisposition. On the other hand, in situations emphasizing task accomplishment, it would be expected that social participation level would be most closely correlated with interpersonal disposition or interpersonal power. The formulation would thus account for the variability attained in factor analyses of small group participations. In some of these studies, two factors have emerged. These two factors have fused either participation and power or participation and interpersonal disposition. In other studies, three independent factors have emerged. In this latter group these three factors typically have tended to correspond to our deprivation ("individual prominence"), mediation ("task solution" or "guidance") and seeking ("sociability") common factors (Henderson, 1963). This fluctuation of number and content of obtained factors in these various studies would be anticipated from the formulation presented here. Depending on the requirements of the situation and the personality types brought together, different configurations of factors would be predicted. Mann has elsewhere investigated and documented the effects of different situational requirements upon the emergent factor structures involved in small groups (Mann, 1961). It is concluded that the present formulation is not contradicted by evidence supplied from small group studies. Rather, the factors uncovered in these studies are viewed as primarily consistent with the structure proposed here. Moreover, it is suggested that this conceptual framework might account for the inconsistencies observed in this area of research.

Schaefer, in still another area of research, the study of mother-child relations, has uncovered a circumplex ordering in the patterning of mother's behavior toward their children (Schaefer, 1959). Common factor analysis of the data reveal two dimensions of significance. These are labelled by Schaefer as control-autonomy and love-hostility. The second is obviously similar to the same set of axes in the Leary grid, and the one proposed in the present research. The control-autonomy factor involves perhaps a fusion of the power and social participation factors. Mothers high on control are high on power and interaction with their children, mothers low on control (high on granting the child his autonomy) are low on power and participation with their children. That the low pole of this dimension is autonomy rather than submission is indicative of the fact that a mother's power over her child is rarely less than the child's power over his mother -- until early adolescence, anyway. Schaefer, also performing order-factoring of the correlation matrix, obtains a quasi-circumplex ordering of the behaviors. Categories such as "ignoring" are found in the quadrant we suppose to be representative of infrequent interaction. At present, no explanation can be offered as to why a third common factor of social participation or power alone did not appear. Possibly the fact that the scales used for the analysis were constructed from ratings of qualitative observer notes (collected for other uses) resulted in less differentiating profiles of behaviors than do scores based on the counting of discrete behavioral utterances.

* * * *

It can be seen from the above comparisons that the structure we propose as underlying children's behavior is compatible with theory and research in at least three separate areas of research: clinical psychology, small group research, and mother-child interaction. Common-factor and order-factor analyses reveal dimensions not unlike those obtained here. The explanatory framework offered by the present writer differs from these other efforts in that it is based directly and heavily upon the assumption that interpersonal interdependence is present. It is the relation between actor and other which is thought to produce the emergent structure. In particular, the interdependence model suggested is that of social exchange.

Validation of the Explanatory System

If the present explanatory system is to move beyond being just another interpretation of a recurring phenomenon, its current surplus meaning must find empirical validation. What further analyses can be implemented to test the properties of this particular model? One possible analysis, with interactional data available from the six culture study, is the examination of the relation of initiated behaviors (those analyzed in this report) to behaviors received by the children from others. Support for the theory will be provided if it is found that children who give to others are the targets for giving in return; children who seek from other receive giving but also depriving in return; children who deprive others receive depriving and avoidance in return; and children who do noe of these things -- that is, who interact infrequently -- receive deprivations but little seeking from others.

The dependence of the interpersonal predisposition dimension on social exchange may be analyzed by the inspection of behavioral sequences. Does giving follow giving? Do deprivations follow deprivations? The prediction from exchange theory is that they would. Because of the way the data was collected, it is impossible to interactionally test the more general hypothesis that interpersonal disposition is a function of the association of outcomes of actor and target. However, some tests of this proposition may be made by recourse to other data available in the study. To the extent to which children in a particular culture must compete with other children for scarce resources, it would be predicted that a more negative interpersonal predisposition would be present. To the extent that a culture provides a more competetive world for its boys than for its girls it would be expected that the boys would be characterized by a more negative interpersonal predisposition than the girls. Settings involving win-lose associations would presumably be more characterized by deprivations than by mediations. Further, children with supportive mothers (as ascertained through mother interview measures) would be predicted to be similarly supportive in their relations with others (through the principle of experienced positive association of outcomes).

Validation of the power dimension would be provided by an analysis of the characteristics of "high-powered" and "low-powered" children. Presumably high-powered children will be, on the average, older than low-powered children. Children characterized as high-powered will be more likely to interact with children younger than themselves. High-powered acts will be directed downward; low-powered acts will be directed upward.

While many indirect tests of the efficacy of the explanation offered can be made with the data available from this study, experimental studies will be the most direct avenue for further testing and refinement of the proposed model. On the one hand, such tests would include the experimental manipulation of the recent exchange process as a proposed antecedent to varying behavioral structures. On the other hand would be the pairing of persons with various kinds of behavioral profiles for the purpose of producing different interaction patterns. If it can be established that differential exchange patterns give rise to different behavioral structures, and particular behavioral structures in specified kinds of social situations give rise to different exchange processes, then it would seem that the proposed model will have been sufficiently differentiated from alternative orientations proposed.

Within-Culture Manifestations of the Cross-Cultural Dimensions of Interpersonal Behavior.

As is frequently the case, the report ends where it might best begin. Given the demonstration of universal dimensions of interpersonal behavior, along with the acknowledgment that cultural origin makes a difference, an interesting question arises: how are the dimensions of interpersonal behavior manifested within any given culture?

The first step in pursuing this analysis will be the assigning of factor scores to individual children on the basis of the common-factor loadings. Once factor scores are assigned, then intensive within-culture analyses can begin. A first question to be asked in such an analysis is how the dimensions relate to one another within each culture. Are the dimensions independent of, or correlated with one another? If a relation other than independence is found, how do these dimensions relate to one another? Do affiliation and power go together in children in some societies but not in others? Is social participation more closely correlated with power in some cultures and affiliation in other cultures? If so, to what societal conditions can these differences be attributed?

A second phase of analysis is to identify children who manifest different configurational patterns along these axes. Questions can be asked as to what attributes particularly characterize these children in this particular culture. Then the antecedents for these patterns can be sought. Once the concomitants and supposed antecedents to these cultural variations have been identified, it will be possible to pursue cultural variance as patterns of differential values of the significant variables common to the condition of humans living in association with one another. Culture can then be treated as a configuration of explanatory variables, rather than as an unexplained source of residual variance.

APPENDIX A

CORRELATION MATRICES FOR RATES BY CULTURE

TABLE A I

Matrix for Rates Okinawa

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.412	.258	.167	.466	.126	.421	-.351	.117	-.003	-.336	-.142
Reprimands	(2)		.199	.497	.532	.259	.547	.061	.576	-.173	-.413	.235
Sugg. respons.	(3)			.208	.305	.393	.171	.178	-.104	.143	-.383	-.034
Gives help	(4)				.291	.309	.266	.392	.759	.055	-.511	.282
Gives supp-app	(5)					.243	.386	.100	.221	-.235	-.423	-.272
Acts sociable	(6)						.262	.313	.110	-.153	-.431	-.133
Contacts phys.	(7)							.067	.388	-.013	.021	.090
Succorance	(8)								.439	-.063	-.443	-.178
Calls att. to self	(9)									-.120	-.399	.155
Assaults soc.	(10)										.239	.382
Assaults	(11)											.391
Symbolic Aggr.	(12)											

TABLE A II

Matrix for Rates Philippines

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.586	.599	.333	.355	.260	.163	.318	-.090	.151	.306	.402
Reprimands	(2)		.591	.462	.561	.427	.037	.353	.183	-.219	.203	.363
Sugg. respons.	(3)			.525	.553	.325	-.116	.265	.058	-.041	-.090	.489
Gives help	(4)				.412	.174	.029	.393	-.134	-.304	.205	-.004
Gives supp.-app.	(5)					.063	-.005	.022	.221	-.011	-.000	.356
Acts sociable	(6)						.404	.435	.352	-.028	.034	.271
Contacts phys.	(7)							.309	.034	.041	-.043	-.224
Succorance	(8)								-.023	-.441	.083	-.063
Calls att. to self	(9)									.171	.098	.290
Assaults soc.	(10)										-.052	.187
Assaults	(11)											-.122
Symbolic aggr.	(12)											

APPENDIX A

CORRELATION MATRICES FOR RATES BY CULTURE (cont.)

TABLE A III

Matrix for Rates
Mexico

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.408	.614	.357	-.176	.443	-.364	.370	-.003	.389	.067	.194
Reprimands	(2)		.522	.197	-.681	.241	-.491	.129	.083	-.003	.325	-.078
Sugg. respons.	(3)			.565	.276	.487	-.306	.329	.010	.136	-.076	-.298
Gives help	(4)				.283	.022	-.272	.049	.081	-.019	-.258	-.123
Gives supp.-app.	(5)					.179	-.029	-.395	-.336	.257	.215	.518
Acts sociable	(6)						-.317	.404	.457	.159	-.337	.220
Contacts phys.	(7)							.144	-.584	.044	.163	.032
Succorance	(8)								.194	-.101	-.451	-.253
Calls att. to self	(9)									-.065	-.296	-.132
Assaults soc.	(10)										-.236	.527
Assaults	(11)											.093
Symbolic aggr.	(12)											

TABLE A IV

Matrix for Rates
Africa

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.191	.283	-.108	.076	.275	-.231	.220	.055	.043	-.375	-.035
Reprimands	(2)		.793	.262	.629	.424	-.392	.045	.228	.343	-.248	.403
Sugg. respons.	(3)			.026	.283	.574	-.407	.278	.342	.188	-.303	.105
Gives help	(4)				.707	-.085	-.048	-.369	-.338	.145	.525	.383
Gives supp.-app.	(5)					.179	-.029	-.395	-.336	.257	.215	.518
Acts sociable	(6)						-.317	.404	.457	.159	-.337	.220
Contacts phys.	(7)							.144	-.584	.044	.163	.032
Succorance	(8)								.194	-.101	-.451	-.253
Calls att. to self	(9)									-.065	-.296	-.132
Assaults soc.	(10)										-.236	.527
Assaults	(11)											.093
Symbolic aggr.	(12)											

APPENDIX A

CORRELATION MATRICES FOR RATES BY CULTURE (cont.)

TABLE A V

Matrix for Rates
India

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate (1)	.202	.068	-.413	.193	.080	.088	-.077	.398	.535	.310	.430
Reprimands (2)		.413	-.193	.212	.261	.018	.008	.514	-.246	-.100	-.003
Sugg. respons. (3)			.081	.121	.119	-.042	.054	.209	-.318	-.346	-.035
Gives help (4)				.786	-.199	-.006	.137	-.272	-.433	-.128	-.265
Gives supp.-app. (5)					-.062	-.228	-.349	.330	-.349	.224	-.203
Acts sociable (6)						.641	.515	.106	-.307	.123	.389
Contacts phys. (7)							.597	.008	-.142	.016	.397
Succorance (8)								-.095	-.179	.122	.338
Calls att. to self (9)									.221	-.252	.031
Assaults soc. (10)										.099	.389
Assaults (11)											.005
Symbolic aggr. (12)											

TABLE A VI

Matrix for Rates
New England

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate (1)	.364	.498	.037	.318	-.175	-.123	-.337	-.089	.249	.080	.535
Reprimands (2)		.037	-.034	.002	-.189	.026	-.329	-.220	-.033	.210	.117
Sugg. respons. (3)			.091	.465	-.113	.191	-.098	.046	.269	-.070	.413
Gives help (4)				.200	.345	-.328	.160	.169	-.122	.336	.137
Gives supp.-app. (5)					-.055	.259	.071	.115	.123	.113	.303
Acts sociable (6)						-.189	.471	.500	.075	.378	.161
Contacts phys. (7)							-.031	-.289	-.151	-.128	-.176
Succorance (8)								.378	.127	.089	.010
Calls att. to self (9)									.058	.193	.195
Assaults soc. (10)										.049	.526
Assaults (11)											.155
Symbolic aggr. (12)											

APPENDIX B

CORRELATION MATRICES FOR PROPORTIONS
BY CULTURE

TABLE B I

Matrix for Proportions
Okinawa

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate (1)	.246	.171	-.083	.491	-.293	.153	-.364	-.052	-.190	-.195	-.329
Reprimands (2)		.057	.164	.366	-.199	.145	-.025	.378	-.472	-.446	-.314
Sugg. respons. (3)			.050	.121	.032	.134	.000	-.323	-.026	-.281	-.272
Gives help (4)				.018	.074	-.245	.202	.545	-.209	-.657	-.361
Gives supp.-app. (5)					-.041	.129	.145	.046	-.358	-.337	-.601
Acts sociable (6)						-.138	.307	-.175	-.335	-.315	-.351
Contacts phys. (7)							-.068	.090	.091	.034	-.300
Succorance (8)								.291	-.252	-.311	-.429
Calls att. to self (9)									-.290	-.433	-.326
Assaults soc. (10)										.305	.311
Assaults (11)											.759
Symbolic aggr. (12)											

TABLE B II

Matrix for Proportions
Philippines

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate (1)	.092	.157	-.047	-.176	-.443	-.101	-.184	-.333	.448	.324	.107
Reprimands (2)		.230	.021	.333	-.218	-.183	-.094	-.036	-.361	.131	-.116
Sugg. respons. (3)			.323	.264	-.412	-.463	.009	-.314	-.233	-.307	.156
Gives help (4)				.255	-.375	-.225	.344	-.392	-.410	.050	-.295
Gives supp.-app. (5)					-.514	-.113	-.018	-.025	-.412	-.121	-.141
Acts sociable (6)						.377	.222	.137	-.079	-.089	-.302
Contacts phys. (7)							.156	-.005	-.068	-.022	-.513
Succorance (8)								-.203	-.527	.012	-.439
Calls att. to self (9)									.053	.133	.043
Assaults soc. (10)										.006	.260
Assaults (11)											.185
Symbolic aggr. (12)											

APPENDIX B

CORRELATION MATRICES FOR PROPORTIONS BY CULTURE (cont.)

TABLE B III

Matrix for Proportions
Mexico

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.196	.104	.028	-.305	-.107	-.349	.025	-.157	.239	.022	.154
Reprimands	(2)		.343	-.121	-.269	-.071	-.536	-.060	.087	-.033	.301	-.163
Sugg. respons.	(3)			.113	.056	-.141	-.383	.139	-.109	.017	-.080	-.619
Gives help	(4)				.035	-.522	-.094	-.314	-.009	-.153	-.161	-.051
Gives supp.-app.	(5)					-.058	.160	.151	-.259	-.470	-.269	-.328
Acts sociable	(6)						.255	-.150	-.361	-.288	-.391	-.009
Contacts phys.	(7)							-.230	-.379	-.321	-.183	-.058
Succorance	(8)								.200	.267	-.037	-.240
Calls att. to self	(9)									.376	.051	.066
Assaults soc.	(10)										.377	.136
Assaults	(11)											.282
Symbolic aggr.	(12)											

TABLE B IV

Matrix for Proportions
Africa

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.025	.089	-.158	.074	.225	-.031	.099	-.085	-.043	-.427	-.145
Reprimands	(2)		.696	-.206	-.087	-.368	-.551	-.214	.185	.094	-.277	-.351
Sugg. respons.	(3)			-.362	-.404	-.040	-.432	-.001	.058	.043	-.449	-.379
Gives help	(4)				.585	-.559	-.278	-.468	-.221	-.157	.354	.012
Gives supp.-app.	(5)					-.391	-.086	-.537	-.318	-.087	.290	-.108
Acts sociable	(6)						.331	.498	.262	-.184	-.352	-.131
Contacts phys.	(7)							.726	-.272	-.122	.011	.114
Succorance	(8)								-.147	-.209	-.278	-.103
Calls att. to self	(9)									-.238	.130	-.264
Assaults soc.	(10)										-.331	.385
Assaults	(11)											-.015
Symbolic aggr.	(12)											

APPENDIX B

CORRELATION MATRICES FOR PROPORTIONS BY CULTURE (cont.)

TABLE B V

Matrix for Proportions
India

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)	(10)	(11)	(12)
Att. to dominate	(1)	.008	-.121	-.528	-.042	-.260	-.249	-.569	.285	.278	.279	.314
Reprimands	(2)		.184	-.251	-.070	.041	-.150	-.227	.402	-.403	-.029	-.246
Sugg. respons.	(3)			.115	-.258	-.058	-.148	.005	-.129	-.398	-.246	-.190
Gives help	(4)				.177	-.396	-.016	.143	-.311	.053	-.179	-.418
Gives supp.-app.	(5)					-.401	-.321	-.334	.106	.581	-.281	.045
Acts sociable	(6)						.321	.175	-.135	-.532	.240	.031
Contacts phys.	(7)							.319	-.173	-.285	-.133	.076
Succorance	(8)								-.429	-.223	-.083	-.214
Calls att. to self	(9)									.062	-.206	.033
Assaults soc.	(10)										-.104	.172
Assaults	(11)											-.275
Symbolic aggr.	(12)											

TABLE B VI

Matrix for Proportions
New England

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Att. to dominate	(1)	.286	.140	.073	.126	-.506	-.249	-.341	-.263	-.005	.083	.309
Reprimands	(2)		-.397	-.161	.039	-.187	.299	-.323	-.322	-.165	-.076	.034
Sugg. respons.	(3)			.090	.536	-.475	.336	.330	-.217	-.010	-.133	.049
Gives help	(4)				.073	-.135	-.287	-.056	.103	-.239	.173	-.112
Gives supp.-app.	(5)					-.478	.564	.164	-.327	-.132	-.100	-.108
Acts sociable	(6)						-.175	-.185	.135	-.201	-.036	-.334
Contacts phys.	(7)							.257	-.396	-.208	-.199	-.210
Succorance	(8)								-.186	.057	-.148	-.216
Calls att. to self	(9)									-.141	.034	-.278
Assaults soc.	(10)										.005	.291
Assaults	(11)											.113
Symbolic aggr.	(12)											

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